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USAAVSCOM

TECHNICAL REPORT TR-89-F-2

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PEACETIME REPLACEMENT AND CRASH DAMAGE FACTORS FOR ARMY AIRCRAFT

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FINAL REPORT

MAY 1989

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U.S. ARMY
AVIATION
SYSTEMS COMMAND

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PEACETIME REPLACEMENT

AND CRASH DAMAGE

FACTORS FOR ARMY AIRCRAFT

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May 1989

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UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

Form Approved OMB No. 0704-0188

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	1b. RESTRICTIVE MARKINGS None
2a. SECURITY CLASSIFICATION AUTHORITY	3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution is unlimited
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	
4. PERFORMING ORGANIZATION REPORT NUMBER(S)	5. MONITORING ORGANIZATION REPORT NUMBER(S)
6a. NAME OF PERFORMING ORGANIZATION USAAVSCOM, Directorate for Systems and Cost Analysis 6b. OFFICE SYMBOL (If applicable) AMSAV-BB	7a. NAME OF MONITORING ORGANIZATION
6c. ADDRESS (City, State, and ZIP Code) St. Louis, MO 63120-1798	7b. ADDRESS (City, State, and ZIP Code)
8a. NAME OF FUNDING/SPONSORING ORGANIZATION 8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c. ADDRESS (City, State, and ZIP Code)	10. SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO. / PROJECT NO. / TASK NO. / WORK UNIT ACCESSION NO.

11. TITLE (Include Security Classification)
Peacetime Replacement and Crash Damage Factors for Army Aircraft

12 PERSONAL AUTHOR(S)
Robert L. Benson

13a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT (Year, Month, Day)	15. PAGE COUNT
Final	FROM 1975 TO 1988	1989, May	90

16. SUPPLEMENTARY NOTATION
Non-Linear Regression Class B Accident Crash Damage
Class A Peacetime Replacement Factors

17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB-GROUP	Non-Linear, Class A, Crash Damage, Linear, Class B, Factors, Regression Analysis, Peacetime Replacement

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

Army aircraft mishaps are among the highest concerns of Army management. The Army invests significant amounts of money into training aviators. The Worldwide Aviation Logistics Conference (WALC) meets annually at the U.S. Army Aviation Systems Command (USAAVSCOM) in St. Louis, Missouri. One of the issues that the WALC addresses is Safety. The WALC uses factors to assess probable accident rates for proposed flying levels. The Peacetime Replacement Factor (PTRF) relates flying hours to the expected number of aircraft losses. The Crash Damage (CD) Factor relates flying hours to the expected number of crash damaged aircraft. Flying hours are expressed in a per 100,000 basis. Annual updates are made to these factors by the Operational Systems Analysis Division of the Directorate for Systems and Cost Analysis at AVSCOM.

Army aircraft mishaps are defined by AR385-40 with specific dollar thresholds. The Class A accident is the most serious. It involves total loss of an aircraft with associated fatalities and/or injuries. Class A mishaps have a threshold of $500,00 or greater

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT ☐ UNCLASSIFIED/UNLIMITED ☒ SAME AS RPT ☐ DTIC USERS	21. ABSTRACT SECURITY CLASSIFICATION (Continued) UNCLASSIFIED
22a. NAME OF RESPONSIBLE INDIVIDUAL Robert L. Benson	22b TELEPHONE (Include Area Code) (314)263-1155 / 22c OFFICE SYMBOL AMSAV-BB

DD Form 1473, JUN 86 Previous editions are obsolete SECURITY CLASSIFICATION OF THIS PAGE

TITLE: Peacetime Replacement Crash Damage Factors for Army Aircraft

Item 19. ABSTRACT (Continued)

Linear regression analysis has been generally successful in generating the PTRF and CD factors for most Army aircraft systems. Cumulative flying hours are regressed against cumulative Class A or Class B accidents. The Class A accident regression generates the PTRF. The Class B accident generates the CD factor. These factors are calculated from the regression equation. The slope of the regression line fitted to Class A accidents and flying hour data points is the PTRF. The slope of the regression line fitted to Class B accidents and flying hour data points is the CD factor.

Non-Linear regression analysis techniques have been applied to those systems that do not fit the linear model well. A typical polynomial equation is:

$$Y = B_0(X)^3 - B_1(X)^2 + B_2(X) - B_3$$

Statistical Analysis System (SAS) software is used to model these systems.

ACKNOWLEDGEMENTS

The author wishes to thank Joan Kapp for her excellent administrative support and valuable suggestions. The author also wishes to thank the AVSCOM Safety Office and Mr. David Scott in particular for their timely responses to data requests.

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I. INTRODUCTION.

A. Army aircraft mishaps are among the highest concerns of Army management. Loss of an aircraft is very expensive in terms of hardware as well as personnel costs. The Army invests significant amounts of money into training aviators. The Worldwide Aviation Logistics Conference (WALC) meets annually at the U.S. Army Aviation Systems Command (USAAVSCOM) in St. Louis, Missouri. One of the issues that the WALC addresses is Safety. The WALC uses factors to assess probable accident rates for proposed flying levels. The Peacetime Replacement Factor (PTRF) relates flying hours to the expected number of aircraft losses. The Crash Damage (CD) Factor relates flying hours to the expected number of crash damaged aircraft. Flying hours are expressed in a per 100,000 basis. Annual updates are made to these factors by the Operational Systems Analysis Division of the Directorate for Systems and Cost Analysis at AVSCOM.

B. Army aircraft mishaps are defined by AR385-40 with specific dollar thresholds. The Class A accident is the most serious. It involves total loss of an aircraft with associated fatalities and/or injuries. Class A mishaps have a threshold of $500,000 or greater. Class B accidents are defined as those between $100,000 and less than $500,000.

II. BACKGROUND. Linear Regression analysis has been used successfully to generate the PTRF and CD factors for most Army aircraft systems. Cumulative flying hours are regressed against cumulative Class A or Class B accidents. The Class A accident regression generates the PTRF. The Class B accident generates the CD factor. These factors are calculated from the regression equation. The slope of the regression line fitted to Class A accidents and flying hour data points is the PTRF. The slope of the regression line fitted to Class B accidents and flying hour data points is the CD factor. AVSCOM Regulation 710-7 requires the Directorate for Systems and Cost Analysis to review and provide updates to the PTRF factors.

III. DATA BASE.

A. DATA SOURCES.

1. The Fort Rucker Aviation Safety Center is the primary source for all data in this study. The Safety Center maintains records on Class A, B, C, D and E accidents. They also keep records on injury and damage losses. Class A accidents are the most serious because they often result in injury and loss of life.

2. **Appendix A** contains the data base used in the latest update of the Crash Damage (CD) and Peacetime Replacement Factors (PTRF) provided to the 1989 WALC Conference. As mentioned before, Class A trends drive the PTRF factor and Class B accidents drive the CD factor. The Safety Office at AVSCOM provides this data through an electronic link. The Safety Office provides data on flying hours for rotary and fixed wing aircraft.

B. MODEL DATA BASE. Data on Class A and B accidents along with associated flying hours are input via Statistical Analysis Systems (SAS) software to the Scientific and Engineering (S&E) computer system at AVSCOM. Data has been collected from 1974 through 1988 and is maintained in a SAS file. The SAS programs used for the linear model is contained in **Appendix B.** Typically, data is input in a free format manner. Variable names are assigned to the data elements, i.e., Class A, Class B, and flying hours. Variables are input to the appropriate SAS procedure. General Linear Models (GLM) is the procedure used for a linear regression. Non-Linear (NLIN) is the procedure used for fitting a curved line to accident and flying hour data points.

IV. ACCIDENT RATE MODELING.

A. LINEAR REGRESSION METHODS.

1. The GLM procedure shown in Appendix B uses a "straight-line" fit to minimize the distance of actual data from the fitted line. It does this through a least squares method. In general, the GLM procedure has been successful in providing an indication of future accident rates. There are many variables which play a part in aviation safety. Some of these variables are:

a. Flying hours.

b. Maintenance.

c. Training.

d. Experience Levels.

e. Aircraft Complexity.

2. Flying hours are not necessarily the most important variable. However, they are relatively easy to capture for most systems. There has been a satisfactory correlation shown between flying hours and accident rates. Variables such as training are much harder to capture. Aircraft complexity is hard to quantify. Maintenance is somewhat more difficult to capture than flying hours. This is an area that should be investigated further. It may be possible to model accident rates with a multiple regression analysis model. This approach would be a logical next step to further refine the present technique. Currently, flying hours are used as an independent variable. Accident rates, i.e., Class A and Class B are the dependent variables.

B. UH-1 LINEAR RESULTS.

1. Figure 4.1 contains a plot of the UH-1 cumulative Class A accidents versus cumulative flying hours. The general model that generates the straight line fit is plotted with the asterisks. The equation of the linear model is:

$$Y = a + bX$$

where: Y = Cumulative Numbers of Class A or B Accidents (Calculated Value)

b = Slope of the Line (Units of Accidents/Units of flying hours)
This is the Crash Damage factor for Class B accidents and the Peacetime Replacement Factor for Class A accidents

X = Cumulative Number of Flying Hours

2. The SAS output listings for the UH-1 and the other aircraft studied are in Appendix B. The listing for the UH-1 shows that it had an R-squared statistic of .935 for the Peacetime Replacement Factor and an F Value of 159.23. The R-Square is calculated by dividing the sum of squares for the model by the corrected total. The corrected total is the sum of the model sum of squares and the error sum of squares. Since the calculated value of F exceeds the table value at a 95% confidence level, the linear model's fit is significant at that confidence level.

UH-1 CUM. ACTUAL & FRED. CLASS A INCIDENTS 1974-1988 10:01 FRIDAY, APRIL 1989

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PLOT OF PREDA*FLTHR SYMBOL USED IS *

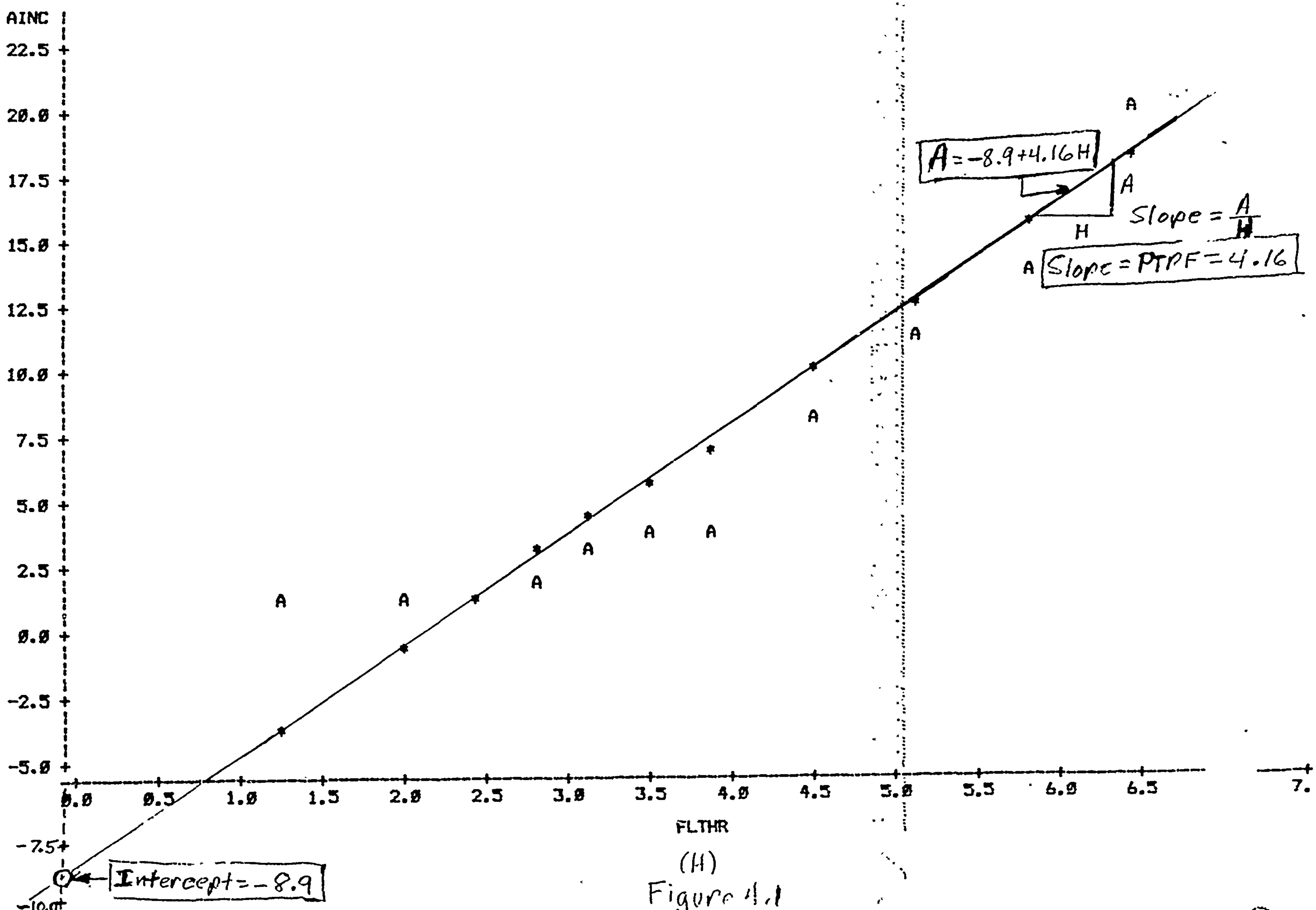


Figure 4.1

C. NON-LINEAR REGRESSION METHODS.

1. Class A or B accident rate data that did not lend itself to the linear methods was input to a non-linear model. The SAS procedure used for this approach is NLIN. **Appendix** contains the program listing for those aircraft with data that did not fit the linear model well.

2. The following aircraft were modeled with a non-linear regression equation:

OH-6A	UH-1 (all models except H)
OH-58 (A,B&C Models)	UH-1H
TH-55	

3. The NLIN procedure requires the user to input a hypothesized model. The first derivative of each constant in the model must also be specified. A typical model used was a "Cubic" equation. The Cubic equation is so named because the largest exponential term in the model is of degree 3. The general form of the model used in this study was:

$$A = B0(H)^3 - B1(H)^2 + B2(H) - B3$$

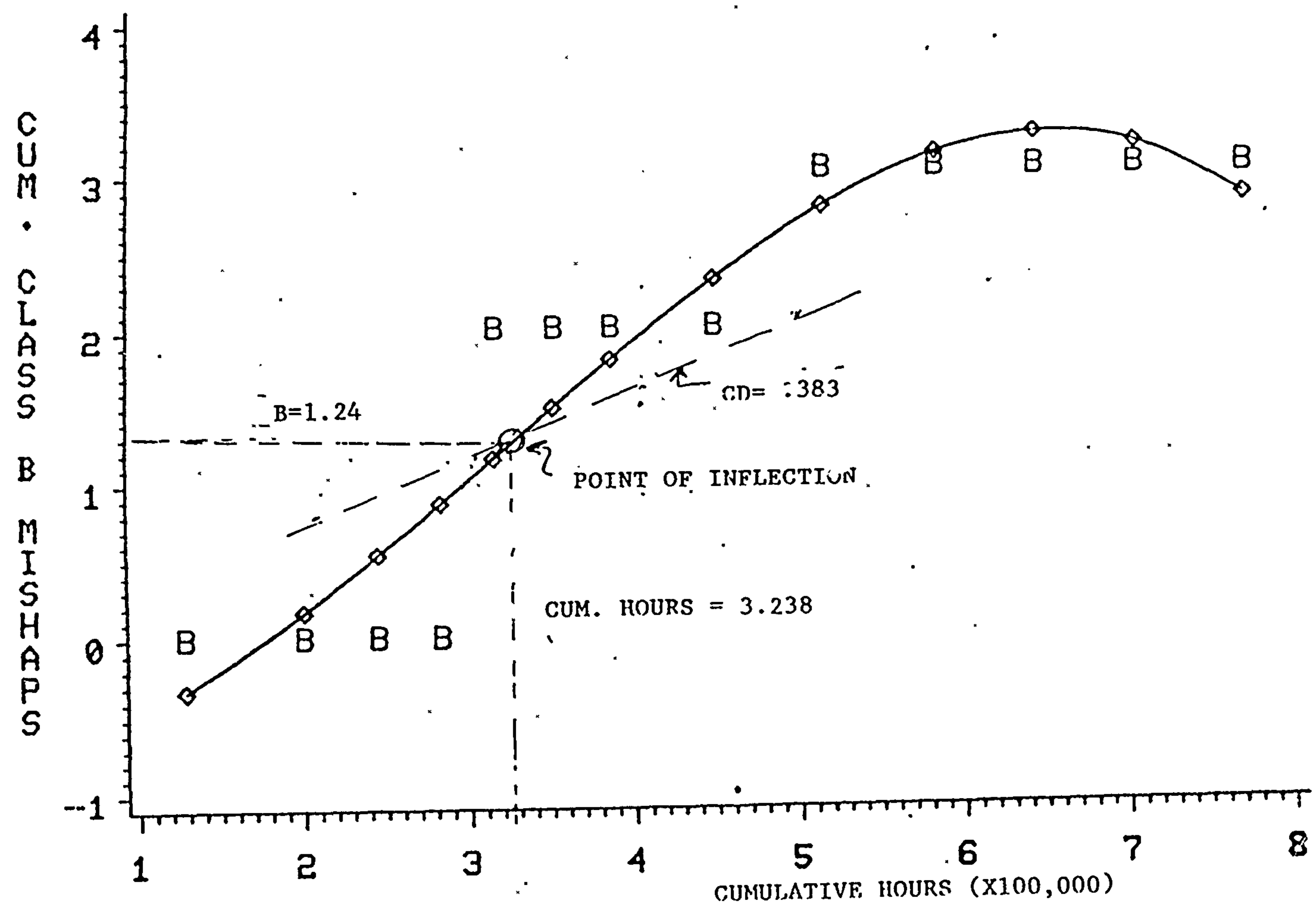
where: B0, B1, B2 & B3 = Constant Coefficients generated by the SAS Model

A = Number of Cumulative Class A or B Accidents

H = Number of Cumulative Flight Hours

4. Figure 5.1 contains an example of a non-linear regression model applied to the UH-1 Class B Data Base. Non-linear equations are contained in **Table 1** for the UH-1, UH-1H, OH-58, OH-6 and the TH-55 aircraft. These are all cubic equations that have been fit with the SAS NLIN procedure. This type of equation will have a number of minimum and maximum points equal to one less than the power of the equation. For example, a cubic equation will always produce two minimum/maximum points.

CUBIC FIT UH−1 PRED. CLASS B INCIDENTS



D. NON-LINEAR REGRESSION METHODS. Since a non-linear curve fit is not a straight line the slope is not a constant. This makes it impossible to generate a replacement or crash damage factor directly from the regression equation. Therefore, another approach is to use the area of the curve which is the "high" point or maximum for the range of data being studied. This is commonly known as the local maximum. The first derivative solution of the non-linear equation will give the points where the slope of the curve equals zero. Two of these points are locations on the curve where the minimum and maximum points will occur. The high point of the fitted curve would give a relative maximum area in which to find a point slope factor. The point slope factor will be the slope of a straight line which touches the curve at the point where the curve changes from an increasing to a decreasing slope. This point is also known as the point of inflection. It is found by taking the second derivation of the curve function and setting it equal to zero.

TABLE 1

NON-LINEAR MODELS

AIRCRAFT	MODEL	R^2	F
UH-1H[1]	$B = -.0279(H)^3 + .27(H)^2 - .0295(H) - .751$	.960	23.7
UH-1H	$A = -.00004(H)^3 + .008(H)^2 + .08375(H) + 4.311$	.996	266.8
OH-6A	$A = -.1218(H)^3 + .856(H)^2 - 1.332(H) + .449$	.931	13.58
OH-58[2]	$A = -.00013(H)^3 + .0089(H)^2 - .1028(H) + .2599$	.959	23.36
TH-55	$A = .07974(H)^3 - 1.715(H)^2 + 11.776(H) + 5.619$	.9995	2210.6

FOOTNOTES: 1/ Includes all models except UH-1H.

2/ Includes A, B, & C Models.

V. NON-LINEAR MODELING RESULTS.

A. GENERAL. The aircraft systems shown in Table 2 were modeled using the non-linear approach described in Section IV of this report. In general, there was an improvement observed in the fit of the non-linear versus the linear model. **Table 2** also shows the R-squared value with the linear and with the non-linear methods. **Table 2** also contains the point slope factor that was generated by the non-linear method. The R-squared values are significantly better with the non-linear equation. This is because the line will fit the discrete increases in cumulative incidents much better than a straight line. A straight line fit is much more limited in its capabilities.

TABLE 2
LINEAR/NON-LINEAR
MODELING COMPARISON

AIRCRAFT	FACTOR		R-SQUARED		% Improvement Non-Linear Model Over Linear Model
	Linear	Non-Linear	Linear	Non-Linear	
UH-1H 1/	.572	.383	.784	.960	22.4
UH-1H	.491	.512	.902	.996	10.4
OH-6	.368	.417	.761	.931	22.3
OH-58 2/	.072	.460	.884	.959	8.5
TH-55	1.305	4.36	.595	.9995	68.0

FOOTNOTES: 1/ Includes all models except UH-1H.

2/ Includes A, B & C Models.

B. UH-1 RESULTS. The UH-1 aircraft systems analyzed consisted of all UH-1 other than the "H" Model. The "H" model was analyzed on its own because it represents the largest number of aircraft in the UH-1 fleet. Class B accidents were studied for this system. Appendix B-1, page 1, contains the data for the UH-1 system. It was found that a cubic equation, i.e., where the highest variable exponent is equal to three fit well. The derived equation is:

$$B = -.0279(H)^3+.271(H)^2-.0295(H) -.751 \quad (5.1)$$

where:

B = Cumulative Number of Clsss B Accidents

H = Cumulative Flying Hours

The equation (5.1) increases from the y axis up to the point where cumulative flying hours equal to 323,800. At this point on the curve, cumulative accidents are equal to 1.32. The slope of the curve is then equal to the number of accidents (A) divided by the number of hours (H).

$$\text{Slope} = \frac{A}{H(\text{per } 100{,}000)} \quad (5.2)$$

$$= \frac{1.32}{3.238}$$

$$= .407$$

The second derivative of the regression equation is taken and set equal to zero. The resulting value of H (Hours Flown) is at the point where the model equation changes from an increasing to a decreasing slope. The following process is used:

(1) Take the first derivative of equation 5.1 with respect to H.

$$\frac{dB}{dH} = -.0837H^2 + .542H + .0295 \quad (5.1.1)$$

(2) Take the second derivative of equation 5.1.1 with respect to H.

$$\frac{d^2B}{dH^2} = -.1674H+.542 \quad (5.1.2)$$

(3) Set equation 5.1.2 equal to zero and solve for the value of H.

$$-.1674(H)+.542 = 0$$
$$.542 = .1674(H)$$
$$H = 3.238$$

(4) Calculate the value of B from equation 5.1 when H equals 3.238.

$$B = -.0279(3.238)^3+.271(3.238)^2+.0295(3.238)-.75$$
$$= -.9472+2.8413+.0955-.75$$
$$= 1.2397$$

(5) Calculate the value of the slope at the point where B equals 1.2397 and H equals 3.238.

$$\text{Slope} = \frac{1.2397}{3.238} = .383$$

Therefore, the new peacetime replacement factor for the UH-1 becomes .383. Figure 4.1 contains the linear plot for the UH-1. As a comparison, Figure 5.1 contains the plot of the UH-1 non-linear curve. The CD factor of .383 is shown also.

C. <u>UH-1H RESULTS</u>.

1. The UH-1H aircraft system was modeled with a cubic equation. Class B accidents were studied to determine a better fit than was possible with the linear model previously used. It was found that the following equation fit very well, resulting in a R-Squared value of .9995:

$$B = -.00004(H)^3+.0\text{[illegible]}81(H)^2+.08376H+4.311 \quad (5.3)$$

2. The following procedure is used to calculate the CD factor:

a. Take the first derivative of equation 5.3 with respect to H.

$$\frac{dB}{dH} = -.00012(H)^2+0612(H)+.08376 \quad (5.3.1)$$

b. Take the second derivative of equation 5.3 with respect to H.

$$\frac{d^2B}{dH} = -.00024(H)+.0162 \quad (5.3.2)$$

c. Set equation 5.3.2 equal to zero and solve for H.

$$-.00024(H)+.0162 = 0$$
$$.0162 = .00024(H)$$
$$H = 67.5$$

d. Calculate the value of B in equation 5.3 when H equals 67.5.

$$B = -.00012(67.5)^3+.0081(67.5)^2+.08376(67.5)+4.311$$
$$= 34.57$$

e. Calculate the slope of a straight line at the point where H equals 67.5 and B equals 34.57. This will become the new CD factor.

$$CD = \frac{34.57}{67.5} = .512$$

The calculated value of F for the model used in equation 5.3 is [illegible]34.7. The table value of F at a 95% confidence level is:

$$F(4,11,.95) = 3.36$$

Since the calculated value of F exceeds the table value, it can be inferred that the regression model exhibits a significant level of fit at 95% confidence.

Figure 5.2 contains the plot of the non-linear curve generated by equation 5.3 and the crash damage factor location on the curve.

CUBIC FIT UH–1H CUM. CLASS B INCIDENTS

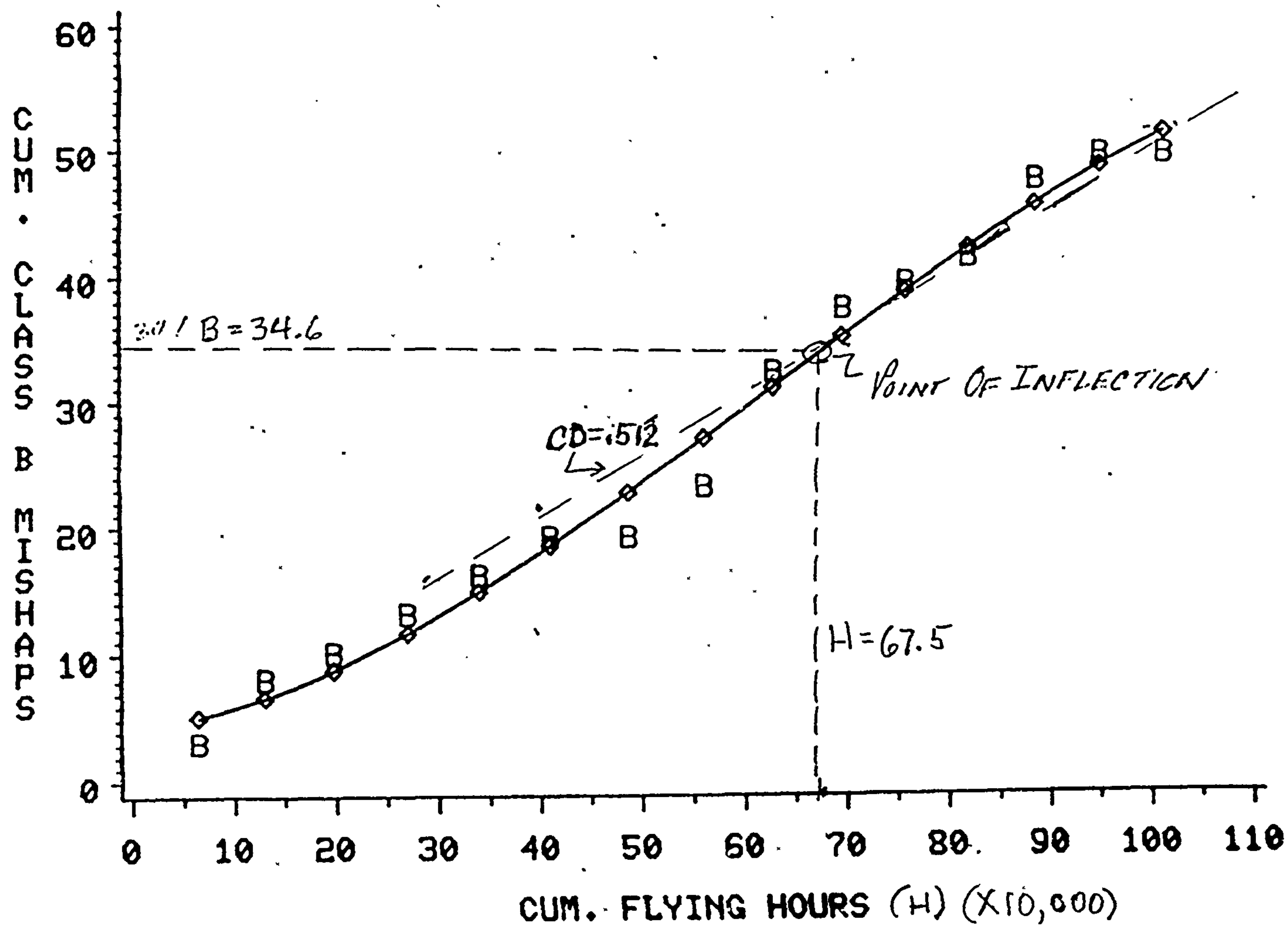


Figure 5.2

D. OH-58 RESULTS.

1. The OH-58 systems analyzed consisted of the "A" and "B" models. The Class B accident data was input to SAS with a cubic equation model. The R-square statistic was calculated at .959 for this aircraft. The derived equation from the SAS program was:

$$B = -.00013H^3+.0089H^2-.1028H+.2599 \quad (5.4)$$

2. Calculation of Crash Damage (CD) Factor: The point of inflection for equation 5.4 is calculated by setting the second derivative equal to zero and solving for the value of H (cumulative hours).

a. First Derivative with respect to H:

$$\frac{dB}{dH} = -.00039(H)^2+.0178(H)-.1028$$

b. Set Second Derivative equal to zero and solve:

$$\begin{aligned} -.00078(H)+.0178 &= 0 \\ .0178 &= .00078(H) \\ H &= 22.8 \text{ Hours} \end{aligned}$$

c. Calculate A when H = 22.8 hours from equation 5.3

$$\begin{aligned} B &= -.00013(22.8)^3+.0089\ (22.8)^2-.1028(22.8)+.2599 \\ B &= -1.54+4.667-2.34+.2599 \\ B &= 1.05 \end{aligned}$$

d. $$\text{Slope} = \frac{\text{Cumulative Accidents}}{\text{Cumulative Hours (Per 100,000)}}$$

$$= \frac{1.05}{2.28}$$

$$= 0.46$$

e. CD factor for the OH-58 equals 0.46.

3. Several points can be calculated with the slope factor of .46:

Flight Hours (Cumulative, Per 100,000)	Class B
1.0	.46
1.5	.69
2.0	.92
2.5	1.15
3.0	1.38

4. Figure 5.3 shows the cumulative hour/accident curve, the point of inflection corresponding to a slope of .46 where Accidents equal 1.05 and hours equal 280,000. Also the straight line generated by a slope of .46 has been plotted for the data pairs shown above.

E. OH-6 RESULTS.

1. The OH-6 Class B accidents and flying hours were modeled by the following cubic equation:

$$A = -.1218H^3+.8564H^2-1.1332H+.449 \quad (5.5)$$

The first and second derivatives of equation 5.5 were calculated to find the point of reflection.

$$\frac{dA}{dH} = -.3654H^2+1.712H-1.1332$$

$$\frac{d^2A}{dH} = -.7308H+1.712$$

2. Setting the second derivative equal to zero and solving for H (Cumulative Hours) results in the point of reflection on the curve shown in Figure 5.6.

$$-.7308H+1.712 = 0$$
$$H = 2.343$$

3. The value of H equal to 2.343 ·   ɪed in equation 5.6 to calculate the number of accidents for this flying ɪevel.

$$A = -.1218(2.343)^3+.856(2.343)^2-1.1332(2.343)+.449$$
$$A = -1.567+4.699-2.655+.449$$
$$A = .926$$

CUBIC FIT OH–58 CUM. CLASS B INCIDENTS

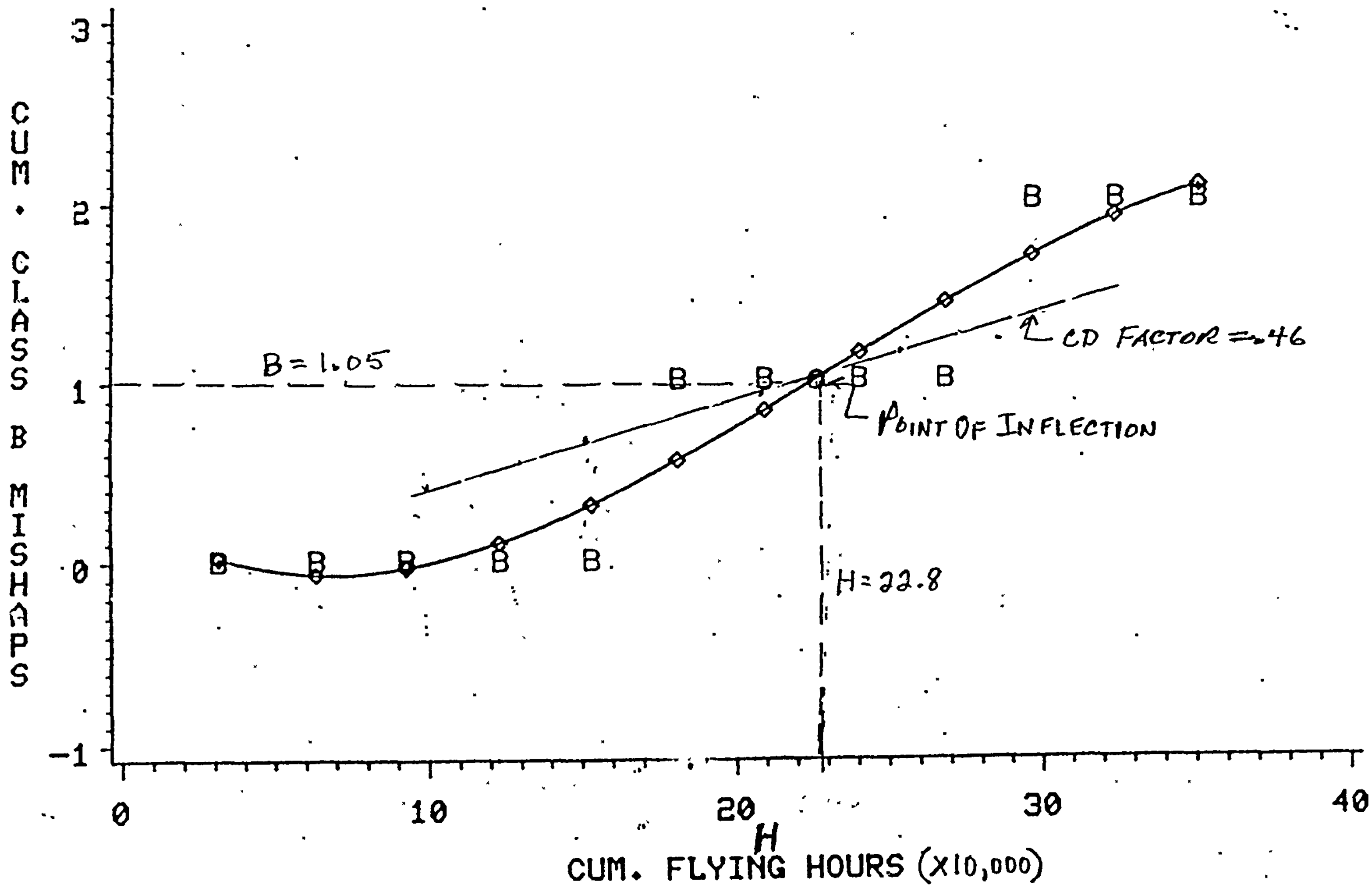


Figure 5.3

4. The slope of a straight line at the point on the curve where H=2.343 and A=.976 becomes the Crash Damage (CD) factor for the OH-6.

$$CD = \frac{.976}{2.343} = .4166$$

5. Several points on the straight line with a slop equal to .4166 were calculated as in the case of the OH-58 system. This line is plotted on Figure 5.4.

6. The R-Squared statistic for the curve generated by the model equation (5.4) is equal to .931. This is a big improvement over the linear model fit of .761. The F test will determine if the curve fitted by the non-linear model is significant. If the calculated F statistic is greater than the table value with a level of significance equal to .95 and 4 degrees of freedom. The table value equals

$$F(4,9,.95) = 3.63$$

7. The calculated value of F from the regression model is:

$$F = \frac{\text{Sum of Squares (Regression)}}{\text{Sum of Squares (Residual)}}$$

$$= \frac{5.5885}{.4115} = 13.58$$

8. Since the calculated value of F is greater than the table value, the regression model exhibits a significant level of fit at the 95% level of confidence.

F. TH-55 RESULTS.

1. The TH-55 model A aircraft was modeled for the occurrence of Class A accidents. A cubic equation was used to model this system:

$$A = .0797H^3-1.715H^2+11.776H+5.619 \quad (5.8)$$

CUBIC FIT OH−6 CUM. CLASS B INCIDENTS

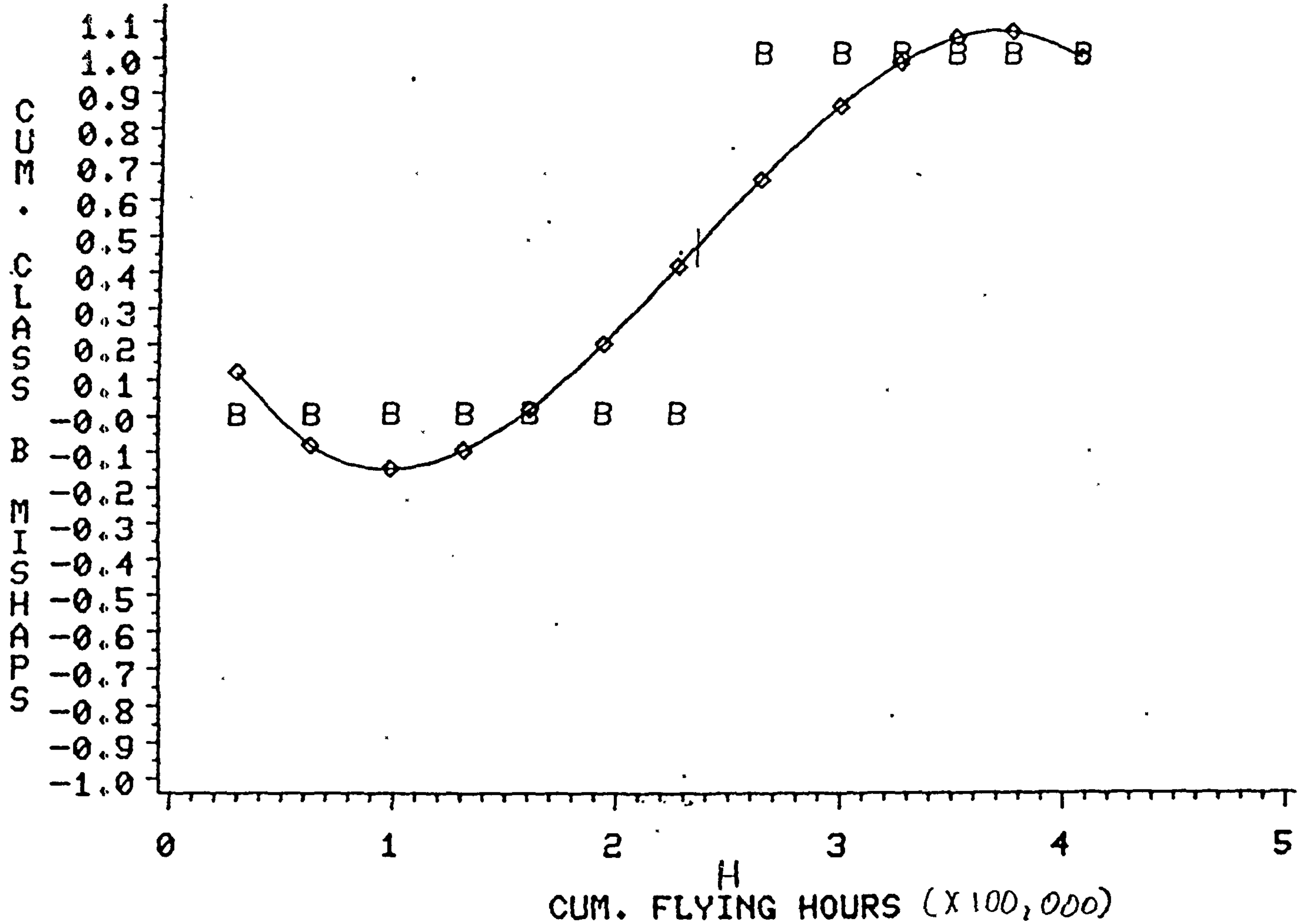


Figure 5.4

2. The first and second derivative of equation 5.8 were calculated to find the point of inflection.

a. First Derivative of H With Respect to A

$$\frac{dA}{dH} = .2391H^2 - 3.43H+11.776$$

b. Second Derivative of H With Respect to A

$$\frac{d^2A}{dH} = .4782H - 3.43$$

3. The next step is to set the second derivative of equation 5.6 equal to zero and solve for H.

$$.472H - 3.43 = 0$$
$$H = 7.17$$

4. The value of H equal to 7.17 is used in equation 5.8 to calculate the number of accidents (A).

$$A = .0797(7.17)^3-1.715(7.17)^2+11.776(7.17)+5.619$$
$$A = 29.3776 - 88.1663 + 84.4339 + 5.619$$
$$A = 31.264$$

Figure 5.6 displays the regression plot for the TH-55 non-linear fit.

5. The slope of a straight line at the point where H equals 7.17 and A equals 31.264 becomes the Peacetime Replacement Factor for the TH-55A.

$$PTRF = \frac{31.264}{7.17} = 4.36$$

6. The R-Squared statistic was also improved for the system. It increased from .595 to .9995. The table value of F at a 95% confidence level is:

$$F(4,8,.95) = 3.84$$

7. The calculated value of F is:

$$F = 10,203.38/4.6156 = 2,210.6$$

8. Since the calculated value of F far exceeds the table value, it can be inferred that the regression model exhibits a significant level of fit at 95% confidence.

9. Figure 5.5 contains the non-linear curve fitted to TH-55 Class A mishaps.

CUBIC FIT TH−55 CUM. CLASS A INCIDENTS

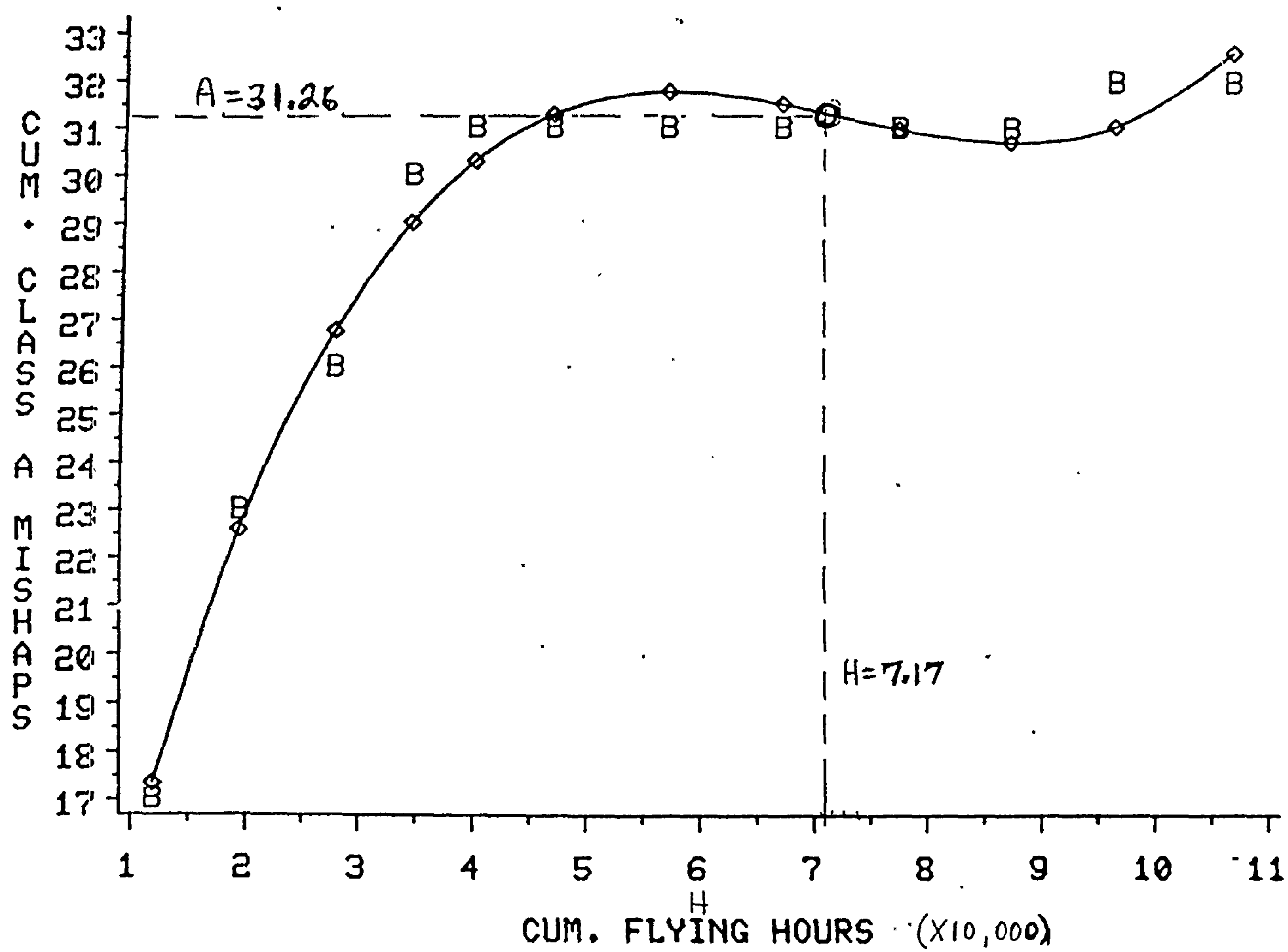


Figure 5.5

VI. CONCLUSIONS.

A. DATA BASE. The least squares regression analysis tool has proven to be a useful method for assessing Class A and B accident rates. The linear method is usually acceptable when there is sufficient data history present. The systems with a smaller occurrence of accidents do not generally fit this type of model well. Examples of these are the Class B accidents for the UH-1, OH-58, OH-6 and TH-55 aircraft. For these aircraft, Class B occurrences are few and far between. Several years may pass before one occurs. Currently, most systems in the data base have fifteen years of data available. This is enough data to get a pretty good idea of trends in accident rates.

B. LINEAR MODEL. The General Linear Models procedure available with Statistical Analysis System (SAS) does a good job of describing accident rates for the aircraft studied. SAS provides enough statistics for the user to judge whether the model fit is satisfying. SAS will also provide a 95% confidence level for each point on the regression line.

C. NON-LINEAR MODEL.

1. The Non-Linear (NLIN) Procedure available with SAS provided a lot of flexibility for the user. It will allow the user to choose almost any type of hypothesized model to fit his or her data. Some models which may be tried are:

a. $Y = aX^b$

b. $Y = ae^{bX}$

c. $Y = b_oX^n + b_1X^{n-1}+..+b_nX^{n-(n+1)}$

2. Along with the SAS plotting procedures, the NLIN procedure provides a fast way to try any equation desired and see the results on a terminal instantly.

VII. CAUTIONS. None of these tools (GLM and NLIN SAS procedures) are meant to provide infallible answers to the user. As with any automated tool, the output is only as good as the input. High R-squared values do not tell the complete story about what is going on with a data base. They should be balanced with other statistical tests of significance. Ideally, the residuals from the regression equation should be plotted and analyzed. Also, the first equation that fits should not be immediately accepted as the best possible model. Several others should be tried and the results compared. Also, one should not extrapolate beyond the range of the data base because the results obtained may be unrealistic.

REFERENCES

1. AR 385-40, Accident Reporting and Records, 1 April 1987, w/AMC Supplement 1, 10 August 1987.

2. AVSCOM Regulation 710-7, Worldwide Aviation Logistics Conference (WALC), 13 March 1989.

APPENDIX A

ACCIDENT AND FLYING HOUR

DATA BASE

NUMBER OF CLASS A, B, AND C AIRCRAFT ACCIDENTS USING CURRENT DOD CRITERIA AND TOTAL FLIGHT HOURS FOR EACH CLASS OF AIRCRAFT, CY 1974-1984

CY and Accident Class (flight hours shown at bottom of each cell)

Year / Class	1974 A	1974 B	1974 C	1974 hours	1975 A	1975 B	1975 C	1975 hours	1976 A	1976 B	1976 C	1976 hours	1977 A	1977 B	1977 C	1977 hours
UH-1*	1		3	128,220			3	71,998			6	44,870	1		1	38,311
UH-1H	12	3	16	642,218	26	5	6	655,387	17	2	22	679,291	11	3	26	721,829
AH-1	5	1	5	65,283	2	5	5	64,986	4	5	14	60,061	2	2	17	72,598
CH-47		1	7	45,430	1	1	5	48,031	1	1	5	50,117	3	3	7	55,747
CH-54				8,355			1	8,846	1			8,125				8,034
OH-6	4		3	30,172	1		3	33,434			2	35,581	3		1	32,702
OH-58	9		10	312,847	6		6	320,753	12		8	293,776	6		14	304,246
TH-55	13		2	118,903	4		1	74,802	3		1	83,633	4		2	64,448
UH-60																
TH-1G				8,256			2	8,531			2	9,324				10,929
C-12								829				9,719				20,610
DI-1																
AH-64																
T-41	1			32,035				23,408				24,164				21,649
T-42			3	28,249			1	26,382	4		2	26,899	2		1	26,007
U-8	2		3	31,038	1		1	38,911	2			35,881	2		2	32,913
U-9				438				559				440				344
J-21				49,549	1			53,306	1			50,459	1	1	3	49,627
OV-1	2			20,244			1	19,792	1		4	21,7061	1	1	2	22,435
[illegible]-12								829				9,719				20,610
[illegible]V-1																
U-21								531								481

Year / Class	1978 A	1978 B	1978 C	1978 hours	1979 A	1979 B	1979 C	1979 hours	1980 A	1980 B	1980 C	1980 hours	1981 A	1981 B	1981 C	1981 hours
UH-1*	1	2	3	32,040	1	1	3	35,422			1	35,262	4		4	62,354
UH-1H	22	3	31	706,485	10	3	19	697,906	12		25	766,317	14	4	14	741,788
AH-1	3	3	13	80,994	3	3	21	82,252	4	5	9	93,712	5	3	14	106,902
CH-47		2	7	57,911	4	1	4	49,854	4	2	8	53,571	2	3	9	57,733
CH-54			1	8,736	1			6,387			2	5,791	1			6,252
OH-6			2	29,599				32,405	1		3	33,002	1	1	7	36,334
OH-58	7		11	298,081	10	1	12	280,669	11		16	282,264	13		17	307,247
TH-55	1			53,761			8	68,679			7	100,409			13	99,431
UH-60								3,639			4	22,671	1	1	9	40,220
TH-1G			1	10,773	1	2		10,674			1	10,965				7,483
C-12			1	31,752			1	43,794			3	50,666		1		58,575
DI-1			3					177				1,375				846
AH-64																
T-41				18,946				12,411				6,273				3,574
T-42	1		1	21,234	1		1	1,105			1	20,355				20,407
U-8			1	25,949				14,982			3	11,285				11,065
U-9				344				309				266				167
J-21	2			50,386			1	46,958			3	50,741	1		2	50,719
OV-1	2		1	21,451	3		2	21,639	1			21,058	2		1	19,224
[illegible]-12			1	31,752			1	43,794			2	50,666		1		58,575
[illegible]V-1				1,100	2			2,092				2,303				2,943
U-21				808				660				431				361

Year / Class	1982 A	1982 B	1982 C	1982 hours	1983 A	1983 B	1983 C	1983 hours	1984 A	1984 B	1984 C	1984 hours
UH-1*	3	1	3	65,502	3		7	68,453	6		1	59,232
UH-1H	17	9	17	669,948	7	5	20	688,587	14	2	14	623,604
AH-1	6	5	14	110,174	6	1	11	113,527	1	1	15	116,742
CH-47	2	2	4	42,584	2	3	10	55,062	2	1	13	53,070
CH-54				6,907		1	1	7,354			2	7,802
OH-6	1		6	34,436			1	27,110	1			25,059
OH-58	8		20	283,449	16	1	22	278,913	7			272,228
TH-55			7	102,757			8	97,938	1		9	92,021
UH-60	3	2	8	55,638	5	2	3	68,293	5	2	7	78,654
TH-1G				906				954				498
C-12		1	5	60,753			4	61,651			2	56,957
DI-1				897				61				2,338
AH-64												124
T-41				1,358				432				681
T-42			1	18,681	1		2	19,870				19,217
U-8			2	9,953	1			10,690			1	9,216
U-9								170				132
J-21			1	56,440			3	53,478	1	1	8	54,402
OV-1	2		1	18,517	2			20,146				18,482
[illegible]-12		1	5	60,753			4	61,651		2		56,957
[illegible]V-1				2,986			1	3,475	2			3,534
U-21				288								

* UH-1/except UH-1H

ALL FY88 PRAMS

01/18/89 PAGE ::::

DMS3T7	A	B	C	D	E	FATAL	DISAB	DMGCOST	INJCOST	TOTCOST
AH1E	0	0	0	8	43	0	0	4698	0	4698
AH1F	4	2	2	56	341	2	4	7364651	503230	7867881
AH1P	0	0	0	13	52	0	1	34964	0	34964
AH1S	0	0	2	18	142	0	0	109041	0	109041
AH6C	2	0	0	0	0	2	0	740900	660000	1400900
AH6G	0	1	0	1	0	0	0	108227	0	108227
AH64	0	0	0	0	1	0	0	0	0	0
AH64A	0	1	5	17	872	0	0	436639	0	436639
A200	0	0	0	1	0	0	0	1000	0	1000
BE20	0	0	0	0	1	0	0	0	0	0
BE65	0	0	0	0	3	0	0	0	0	0
CE31	0	0	0	0	1	0	0	0	0	0
CH47B	0	0	0	0	3	0	0	0	0	0
CH47C	1	1	2	18	94	0	5	4458274	94830	4553104
CH47D	1	4	4	44	96	10	10	6368683	2460945	8829628
CH54A	0	0	0	1	15	0	0	100	0	100
CH54B	0	0	1	0	5	0	0	60000	0	60000
C12C	0	0	1	14	53	0	0	119822	0	119822
C12D	0	0	0	4	24	0	0	1546	0	1546
C12F	0	0	0	2	6	0	0	2100	0	2100
C12G	0	0	0	0	3	0	0	0	0	0
C12L	0	0	0	0	3	0	0	0	0	0
C20E	0	0	0	0	3	0	0	0	0	0
C680	0	0	0	0	2	0	0	0	0	0
C7A	0	0	0	0	8	0	0	0	0	0
D330	0	0	0	1	13	0	0	6626	0	6626
EH1H	0	0	0	0	2	0	0	0	0	0
EH1X	0	0	0	1	2	0	0	1952	0	1952
EH60A	0	0	0	2	10	0	0	4239	0	4239
G159	0	0	0	1	2	0	0	3914	0	3914
K	0	1	0	0	0	0	0	100000	0	100000
K27	0	0	0	0	1	0	0	0	0	0
MH6B	0	0	1	0	1	0	0	10000	0	10000
MH6H	1	0	0	0	0	0	0	978000	0	978000
OH58A	5	0	1	27	280	5	5	1104606	1257000	2361606
OH58C	1	0	2	22	265	0	2	521115	0	521115
OH58D	0	0	0	4	37	0	0	8375	0	8375
OH6A	1	0	2	4	63	0	1	216243	3090	219333
OV1C	0	0	0	0	1	[redacted]	[redacted]	0	0	0
OV1D	0	0	1	14	77	[redacted]	[redacted]	58496	0	58496
PA31	0	0	0	0	1	[redacted]	[redacted]	0	0	0
RV1D	0	1	0	2	40	[redacted]	[redacted]	161009	0	161009
SD330	0	0	0	1	4	0	0	5845	0	5845
TH55A	0	0	1	1	0	0	0	34907	0	34907
T34	0	0	0	0	1	0	0	0	0	0
T42A	1	0	0	0	9	3	0	104093	0	104093
UH1	0	0	1	0	0	0	0	51000	0	51000
UH1H	9	0	8	85	879	4	35	8508690	1519780	10028470
UH1M	0	0	0	5	38	0	0	11062	0	11062
UH1V	1	0	1	10	67	0	4	987479	17160	1004639
UH60A	5	3	2	99	502	17	9	22307841	2349415	24657256
UV18A	0	0	0	2	0	0	0	6900	0	6900
UV20A	0	0	0	0	1	0	0	0	0	0
U21	0	0	0	0	1	0	0	0	0	0
U21A	0	0	2	3	62	0	0	111153	0	111153
U21B	0	0	0	0	1	0	0	[illegible]	[illegible]	[illegible]

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U21F	0	0	0	1	6	0	1	0	340	340
U21G	0	0	1	0	7	0	0	106346	0	106346
U21H	0	0	0	1	35	0	0	128	0	128
U3A	0	0	0	0	1	0	0	0	0	0
U8F	0	0	0	0	16	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0
TOTAL	32	14	40	485	4203	43	77	55220837	8865790	64086627

COUNT OF AIRCRAFT 4,776
COUNT OF ACCIDENTS 4,774

19 11 23 355

ALL FY88 FLIGHT HOURS

	881	882	883	884	]			OTHER	TOTAL	
AH1E	2692	2616	3363	2758		0	0	0	11429	134,570
AH1F	18668	14499	18804	18190		0	0	0	70161	
AH1G	0	0	0	0		0	0	0	0	
AH1P	4267	3587	4792	3830		0	0	0	16476	
AH1S	8144	8749	9189	10422		0	0	0	36504	
AH6C	689	489	564	723		0	0	0	2465	
AH6F	539	111	42	0		0	0	0	692	
AH6G	1121	1217	1076	950		0	0	0	4364	
AH64A	11262	11048	15837	19034		0	0	0	57181	
A31T	0	0	0	0		0	0	0	0	
A90	0	11	129	205		0	0	0	345	
BE65	313	282	453	448		0	0	0	1496	
BE80	2	13	38	14		0	0	0	67	
B80	40	40	65	60		0	0	0	205	
CE31	301	280	442	400		0	0	0	1423	
CE40B	74	109	100	94		0	0	0	377	
CH47A	0	0	0	0		0	0	0	0	
CH47B	884	606	188	0		0	0	0	1678	61331
CH47C	6751	5139	6835	5483		0	0	0	24208	
CH47D	9846	6667	8772	10160		0	0	0	35445	
CH54A	1152	983	1911	1662		0	0	0	5708	
CH54B	558	577	964	879		0	0	0	2978	8686
C12C	11351	9104	11276	9571		0	0	0	41302	
C12D	4529	3650	4470	3809		0	0	0	16458	
C12F	2239	2523	2848	3051		0	0	0	10661	70290
C12L	417	500	517	435		0	0	0	1869	
C20E	0	0	0	219		0	0	0	219	
C6A	13	97	131	140		0	0	0	381	
C680	167	91	180	101		0	0	0	539	
C7A	619	800	753	729		0	0	0	2901	
D330	620	510	383	376		0	0	0	1889	
EH1H	747	828	807	595		0	0	0	2977	
EH1X	111	104	276	154		0	0	0	645	
EH6E	0	0	0	0		0	0	0	0	
EH60A	415	447	919	1064		0	0	0	2845	
EH60B	0	0	0	0		0	0	0	0	
F10B	0	0	0	0		0	0	0	0	
F86E	0	2	8	0		0	0	0	10	
G159	117	58	166	109		0	0	0	450	
MH6B	751	464	686	794		0	0	0	2695	
MH6E	826	529	300	81		0	0	0	1736	
MH6H	531	456	698	636		0	0	0	2321	
OH58A	38722	33303	49391	46043		0	0	0	167459	
OH58C	28441	21589	29517	31179	28	0	0	0	110726	296,704
OH58D	4392	3522	5209	5476		0	0	0	18599	
OH6A	6635	6294	8624	10087		0	0	0	31640	31640
OV1B	0	0	0	0		0	0	0	0	

O2A	47	36	32	65	0	0	0	180	
RA3B	0	0	101	11	0	0	0	112	
RC12D	1566	1919	1758	1876	0	0	0	7119	
RC12G	683	723	720	778	0	0	0	2904	
RV1D	1115	1237	1128	1256	0	0	0	4736	4736
THIG	0	0	0	0	0	0	0	0	0
TH55A	23963	18235	15644	0	0	0	0	57842	5784
T28B	0	0	0	0	0	0	0	0	
T41B	127	71	87	75	0	0	0	360	
T42A	1368	1103	1154	1348	0	0	0	4973	4973
UH1B	0	0	0	0	0	0	0	0	
UH1D	0	0	0	0	0	0	0	0	63416
UH1H	161940	129100	173193	169936	0	0	0	634169	
UH1M	4245	3498	4919	4285	0	0	0	16947	66640
UH1V	11245	9928	13460	15060	0	0	0	49693	
UH60	0	0	0	0	0	0	0	0	
UH60A	44607	37900	46266	48332	0	0	0	177105	177105
UH61A	0	0	0	0	0	0	0	0	
UV18A	436	402	569	511	0	0	0	1918	
UV20A	142	65	143	149	0	0	0	499	
U21A	9465	8663	10002	9488	0	0	0	37618	
U21B	124	170	140	183	0	0	0	617	
U21C	130	170	179	122	0	0	0	601	
U21D	149	212	426	278	0	0	0	1065	59,173
U21F	571	616	614	558	0	0	0	2359	
U21G	1096	920	890	1027	0	0	0	3933	
U21H	3223	3247	3273	3237	0	0	0	12980	
U3A	132	140	89	0	0	0	0	361	
U3B	127	116	142	184	0	0	0	569	
U8F	2484	2252	2828	3378	0	0	0	10942	
OTHER	0	0	0	0	0	0	0	0	
TOTAL	443034	367857	474328	456778	0	0	0	1741997	

COUNT OF FLT HOUR RECORDS 3,536
END OF THIS QUERY - DO YOU WISH A PRINTED REPORT? (Y)ES (N)O

THIS INFORMATION CAME FROM HOWARD EKTEND IN SAFETY OFFICE (X3524) – HE INFORMS ME THAT THIS COMES FROM SAME DATA BASE AS FT. RUCKER VIA MICROWAVE DATALINK

APPENDIX B

SAS LINEAR MODELS

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: AINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	840.83719583	840.83719583	159.23	0.0001	0.935283	25.
ERROR	11	58.08588109	5.28053464		ROOT MSE		AINC
CORRECTED TOTAL	12	898.92307692			2.29774139		1.9230

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VAL	PR
FLTHR	1	840.83719583	159.23	0.0001	1	840.83719583	159.	0.

PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > !T!	STD ERROR OF ESTIMATE
INTERCEPT	-8.88259362	-5.74	0.0001	1.54830461
FLTHR	4.15945583	12.62	0.0001	0.32962452

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	1.00000000	-3.55849015	4.55849015	-6.14834740	-0.96863291
2	1.00000000	-0.56368195	1.56368195	-2.73276673	1.60560282
3	1.00000000	1.30807317	-0.30807317	-0.62375868	3.23989762
4	2.00000000	2.88866639	-0.88866639	1.13493034	4.64240243
5	3.00000000	4.21969225	-1.21969225	2.59464626	5.84473825
6	4.00000000	5.71709635	-1.71709635	4.20697782	7.22721489
7	4.00000000	7.17290589	-3.17290589	5.73730539	8.60850637
8	8.00000000	9.75176851	-1.75176851	8.34157268	11.16196434
9	11.00000000	12.45541480	-1.45541480	10.92330468	13.98752491
10	14.00000000	15.32543932	-1.32543932	13.53245011	17.11842853
11	20.00000000	17.82111282	2.17888718	15.72910173	19.91312391
12	23.00000000	20.35838088	2.64161912	17.91972381	22.79683794
13	24.00000000	23.10362173	0.89637827	20.26012450	25.94711895

SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	58.08588109
SUM OF SQUARED RESIDUALS - ERROR SS	-0.00000000
PRESS STATISTIC	89.25441[illegible]
FIRST ORDER AUTOCORRELATION	0.53057637
DURBIN-WATSON D	0.56727113

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: BINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	15.71604541	15.71604541	39.87	0.0001	0.783743	35.
ERROR	11	4.39164690	0.39924063		ROOT MSE		BINC
CORRECTED TOTAL	12	20.30769231			0.63185471		.7692

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VAL	PR
FLTHR	1	15.91604541	39.87	0.0001	1	15.91604541	39.	0.

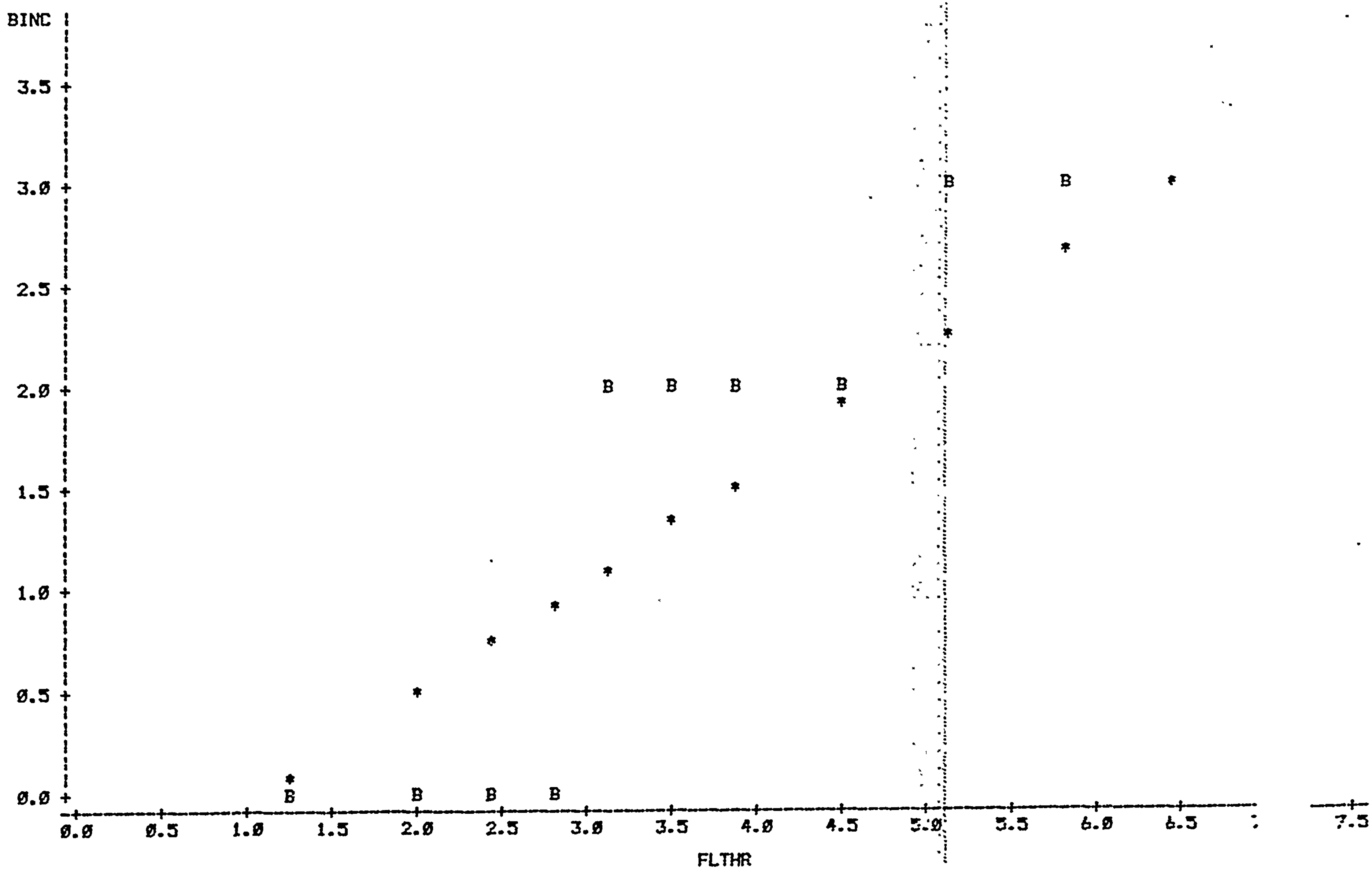
PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	-0.68050904	-1.60	0.1382	0.42573056
FLTHR	0.57226626	6.31	0.0001	0.09063541

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	0.00000000	0.05199177	-0.05199177	-0.66012996	0.76411351
2	0.00000000	0.46402348	-0.46402348	-0.13245528	1.06059225
3	0.00000000	0.72154330	-0.72154330	0.19035813	1.25272847
4	0.00000000	0.93900448	-0.93900448	0.45678734	1.42122162
5	2.00000000	1.12212769	0.87787031	0.67529789	1.56896149
6	2.00000000	1.32814554	0.67185446	0.91271484	1.74337624
7	2.00000000	1.52843873	0.47156127	1.13369793	1.92317953
8	2.00000000	1.88324382	0.11675618	1.49548843	2.27099921
9	3.00000000	2.25521689	0.74478311	1.83373926	2.67649452
10	3.00000000	2.65008061	0.34991939	2.15797020	3.14309102
11	3.00000000	2.99344037	0.00655963	2.41820921	3.56867152
12	3.00000000	3.34252279	-0.34252279	2.67293090	4.01301468
13	3.00000000	3.72021852	-0.72021852	2.93835451	4.50208254

SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	4.39164690
SUM OF SQUARED RESIDUALS - ERROR SS	-0.00000000
PRESS STATISTIC	6.1033[illegible]55
FIRST ORDER AUTOCORRELATION	0.40261385
DURBIN-WATSON D	1.07604285

UH-1 CUM. ACTUAL & PRED. [illegible]SS B INCIDENTS 1974-1988 10:01 FRIDAY, APRIL [illegible]989

PLOT OF BINC*FLTHR SYMBOL USED IS B
PLOT OF PREDB*FLTHR SYMBOL USED IS *



GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: AINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	34126.41383183	34126.41383183	1083.83	0.0001	0.989953	3.
ERROR	11	346.35539894	31.48685445		ROOT MSE		AINC
CORRECTED TOTAL	12	34472.76923077			5.61131496		.3076

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VAL	PR
FLTHR	1	34126.41383183	1083.83	0.0001	1	34126.41383183	1083.	0.

PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	12.45202382	3.80	0.0029	3.27471078
FLTHR	1.97325048	32.92	0.0001	0.05993790

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	12.00000000	25.12029190	-13.12029190	18.64533817	31.59524563
2	38.00000000	38.10428006	-0.10428006	32.34761650	43.86094363
3	55.00000000	51.52238333	3.47761667	46.45848879	56.58627787
4	66.00000000	65.72978679	0.27021321	61.31841291	70.14116063
5	88.00000000	79.54254016	8.45745984	75.64650632	83.43857400
6	98.00000000	93.35529352	4.64470648	89.80515288	96.90543417
7	110.00000000	108.54932223	1.45067777	105.12291307	111.97573139
8	124.00000000	123.15137578	0.84862422	119.56593610	126.73681547
9	141.00000000	136.37215400	4.62784600	132.43399233	140.31031567
10	148.00000000	149.98758232	-1.98758232	145.52941761	154.44574703
11	162.00000000	162.22173530	-0.22173530	157.20658664	167.24288396
12	172.00000000	174.45588828	-2.45588828	168.80906363	180.10271293
13	181.00000000	186.88736631	-5.88736631	180.55968759	193.21504503

SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	346.35539894
SUM OF SQUARED RESIDUALS - ERROR SS	-0.00000000
PRESS STATISTIC	567.33386317
FIRST ORDER AUTOCORRELATION	0.17801106
DURBIN-WATSON D	1.04689425

*UH-1H LINEAR FIT   10:01 FRIDAY, APRIL ...987

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: BINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	2115.12869618	2115.12869618	100.91	0.0001	0.901708	20.
ERROR	11	230.56361152	20.96032832		ROOT MSE		BINC
CORRECTED TOTAL	12	2345.69230769			4.57824511		[illegible].1538

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VAL	PR
FLTHR	1	2115.12869618	100.91	0.0001	1	2115.12869618	100.	0.

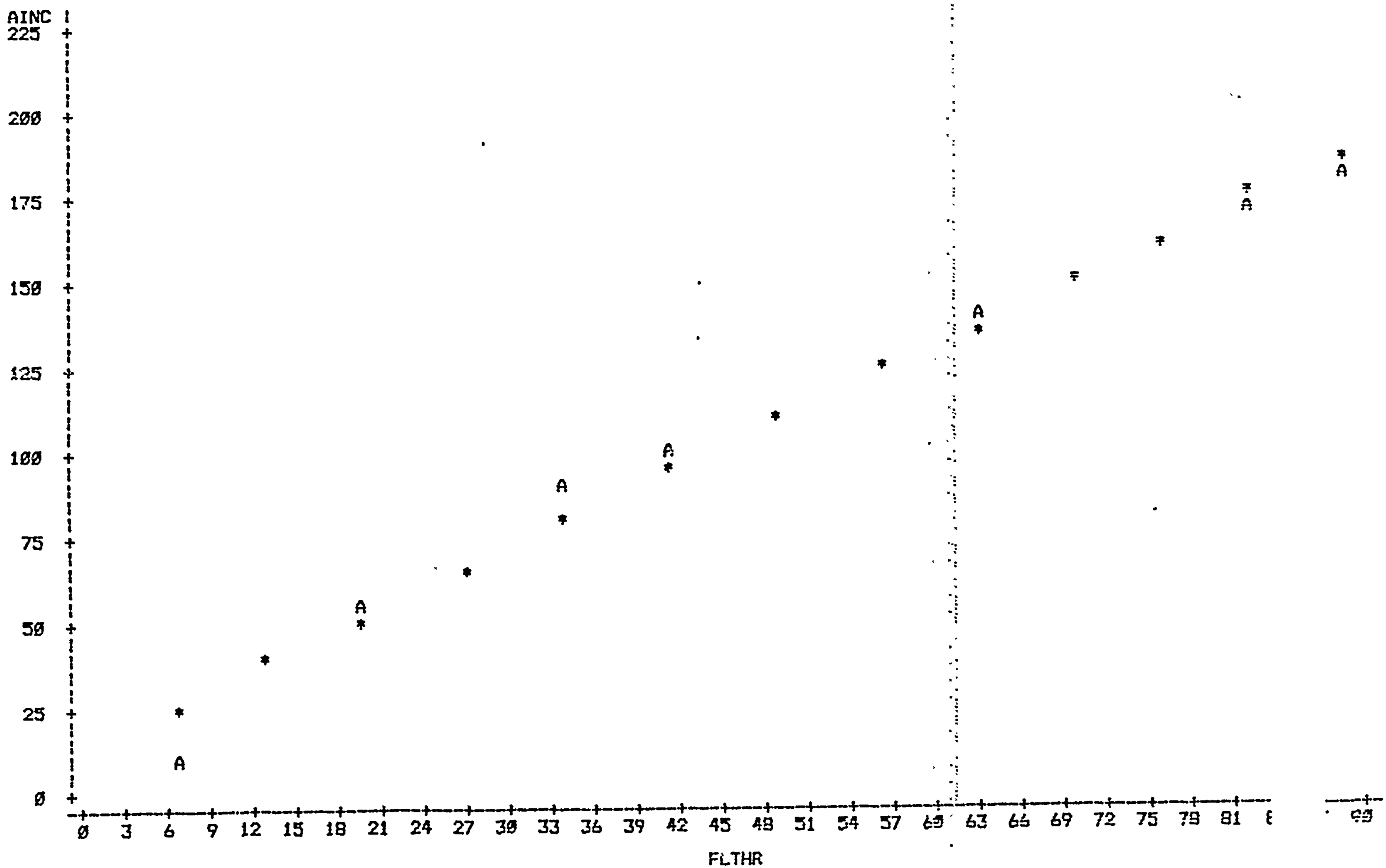
PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	-1.46106746	-0.55	0.5954	2.67182095
FLTHR	0.49125308	10.05	0.0001	0.04890305

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	3.00000000	1.69277733	1.30722267	-3.59010663	6.97566129
2	5.00000000	4.92522262	0.07477738	0.22838819	9.62205705
3	10.00000000	8.26574359	1.73425641	4.13413611	12.39735107
4	13.00000000	11.80276579	1.19723421	8.20354682	15.40198477
5	16.00000000	15.24153738	0.75846262	12.06278189	18.42029287
6	19.00000000	18.68030897	0.31969103	15.78376610	21.57685183
7	19.00000000	22.46295771	-3.46295771	19.66736677	25.25854865
8	13.00000000	26.09823053	-13.09823053	23.17288734	29.02357372
9	32.00000000	29.38962619	2.61037381	26.17649881	32.60275357
10	37.00000000	32.77927247	4.22072753	29.14187708	36.41666786
11	39.00000000	35.82504159	3.17495841	31.72831027	39.92177290
12	41.00000000	38.87081070	2.12918930	34.26359332	43.47802809
13	41.00000000	41.96570513	-0.96570513	36.80298215	47.12842811

SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	230.56361152
SUM OF SQUARED RESIDUALS - ERROR SS	-0.00000000
PRESS STATISTIC	284.41634141
FIRST ORDER AUTOCORRELATION	0.18492410
DURBIN-WATSON D	1.61869544

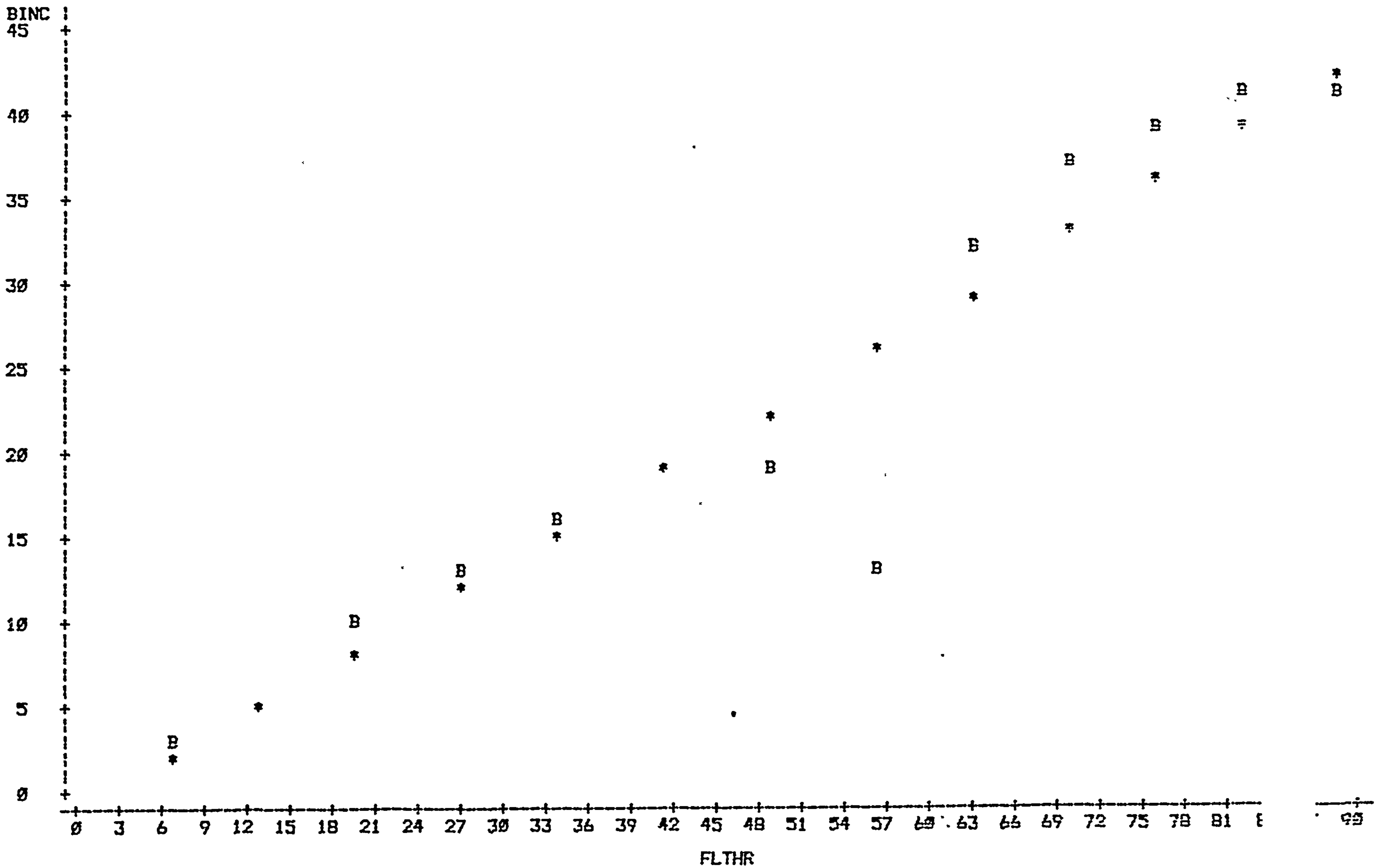
UH-1H CUM. ACTUAL & PRED. CLASS A INCIDENTS 1974-1988 10:01 FRIDAY, APRIL 1989

PLOT OF AINC*FLTHR SYMBOL USED IS A
PLOT OF PREDA*FLTHR SYMBOL USED IS *



UH-1H CUM ACTUAL & PREDICTED CLASS B INCIDENTS 1974-1988 10:01 FRIDAY, APRIL 1989

PLOT OF BINC*FLTHR SYMBOL USED IS B
PLOT OF PREDB*FLTHR SYMBOL USED IS *



GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: AINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	2796.57964095	2796.57964095	1500.80	0.0001	0.992724	5.
ERROR	11	20.49728213	1.86338928		ROOT MSE		AINC
CORRECTED TOTAL	12	2817.07692308			1.36506018		1.6153

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VAL	PR
FLTHR	1	2796.57964095	1500.80	0.0001	1	2796.57964095	1500.	0.

PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	2.65347775	3.77	0.0031	0.70331294
FLTHR	4.01092121	38.74	0.0001	0.10353384

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	5.00000000	5.27260930	-0.27260930	3.84777277	6.69744583
2	7.00000000	7.86767533	-0.86767533	6.55958727	9.17576338
3	11.00000000	10.27422805	0.72577195	9.06838395	11.48007215
4	13.00000000	13.20220054	-0.20220054	12.11052668	14.29387439
5	16.00000000	16.45104672	-0.45104672	15.46846207	17.43363136
6	19.00000000	19.74000211	-0.74000211	18.84233465	20.63766956
7	23.00000000	23.47015883	-0.47015883	22.62799763	24.31232004
8	28.00000000	27.80195374	0.19804626	26.95944939	28.64445809
9	34.00000000	32.21396707	1.78603293	31.30022428	33.12770986
10	40.00000000	36.74630804	3.25369196	35.70021823	37.79239785
11	41.00000000	41.43908585	-0.43908585	40.21327923	42.66489247
12	46.00000000	46.57306500	-0.57306500	45.11974698	48.02638303
13	50.00000000	51.94769942	-1.94769942	50.23523175	53.66016710

SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	20.49728213
SUM OF SQUARED RESIDUALS - ERROR SS	-0.00000000
PRESS STATISTIC	30.0363[illegible]84
FIRST ORDER AUTOCORRELATION	0.39462011
DURBIN-WATSON D	1.20205921

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: BINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	1674.38848501	1674.38848501	161.03	0.0001	0.936056	14.
ERROR	11	114.38074576	10.39824961		ROOT MSE		BINC
CORRECTED TOTAL	12	1788.76923077			3.22463170		1.3676

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VAL	PR
FLTHR	1	1674.38848501	161.03	0.0001	1	1674.38848501	161.	0.

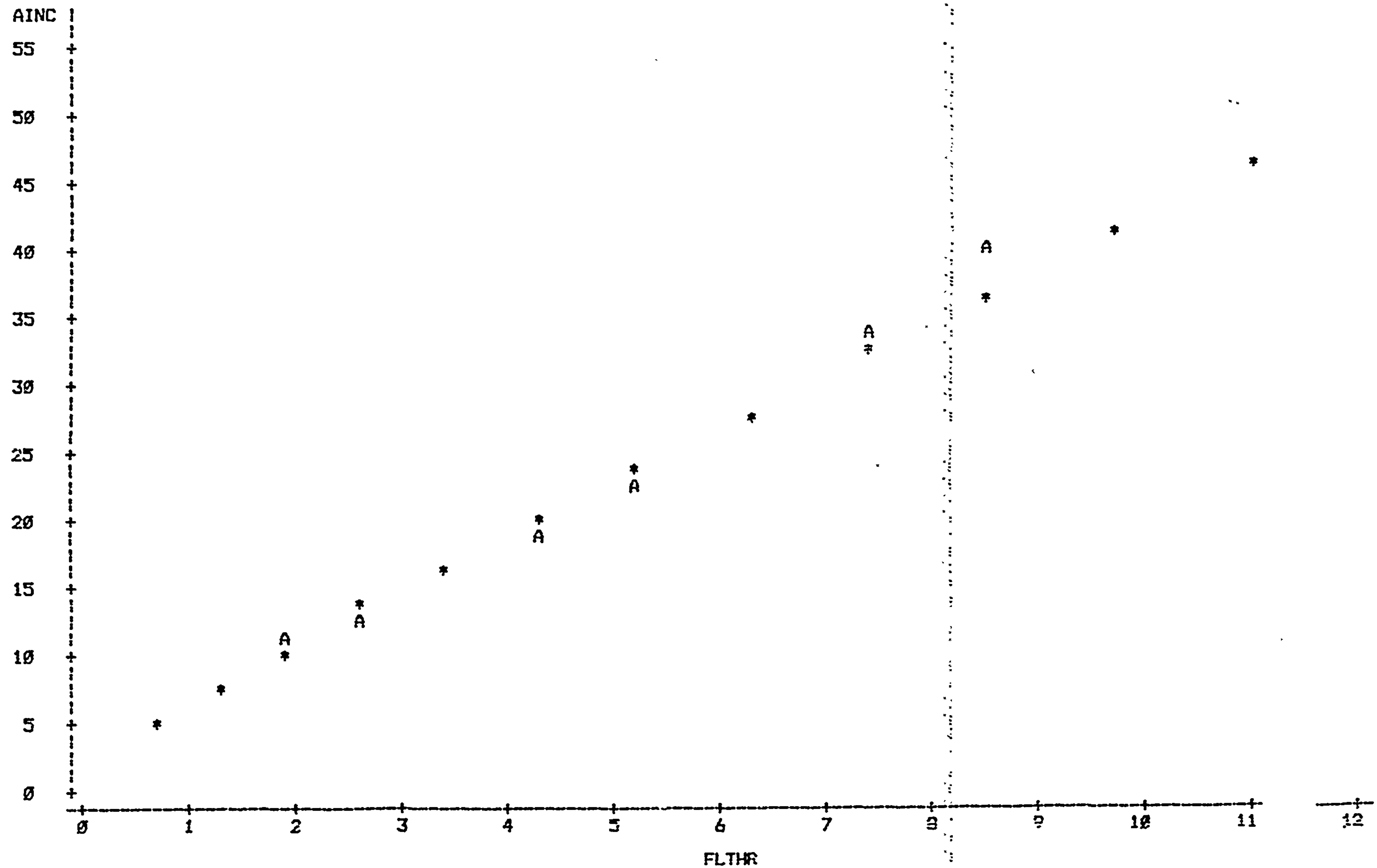
PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	4.54035000	2.73	0.0195	1.66141041
FLTHR	3.10354931	12.69	0.0001	0.24457421

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	1.00000000	6.56696770	-5.56696770	3.20112850	9.93280690
2	6.00000000	8.57496410	-2.57496410	5.48471555	11.66501265
3	11.00000000	10.43709368	0.56290632	7.58857230	13.28561507
4	13.00000000	12.70268468	0.29731532	10.12336349	15.28155587
5	16.00000000	15.21655961	0.78344039	12.89543587	17.53768336
6	19.00000000	17.76147004	1.23852996	15.64674307	19.85199762
7	24.00000000	20.64777090	3.35222910	18.65836430	22.63717759
8	27.00000000	23.99960415	3.00039585	22.00938695	25.98982134
9	32.00000000	27.41350838	4.58649162	25.25500723	29.57200954
10	33.00000000	30.92051910	2.07948090	28.44937942	33.39165879
11	34.00000000	34.55167179	-0.55167179	31.65579366	37.44734991
12	36.00000000	38.52421490	-2.52421490	35.09109491	41.95733489
13	38.00000000	42.68297097	-4.68297097	38.63767124	46.72827070

SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	114.38074576
SUM OF SQUARED RESIDUALS - ERROR SS	-0.00000000
PRESS STATISTIC	179.25766645
FIRST ORDER AUTOCORRELATION	0.55805474
DURBIN-WATSON D	0.42121347

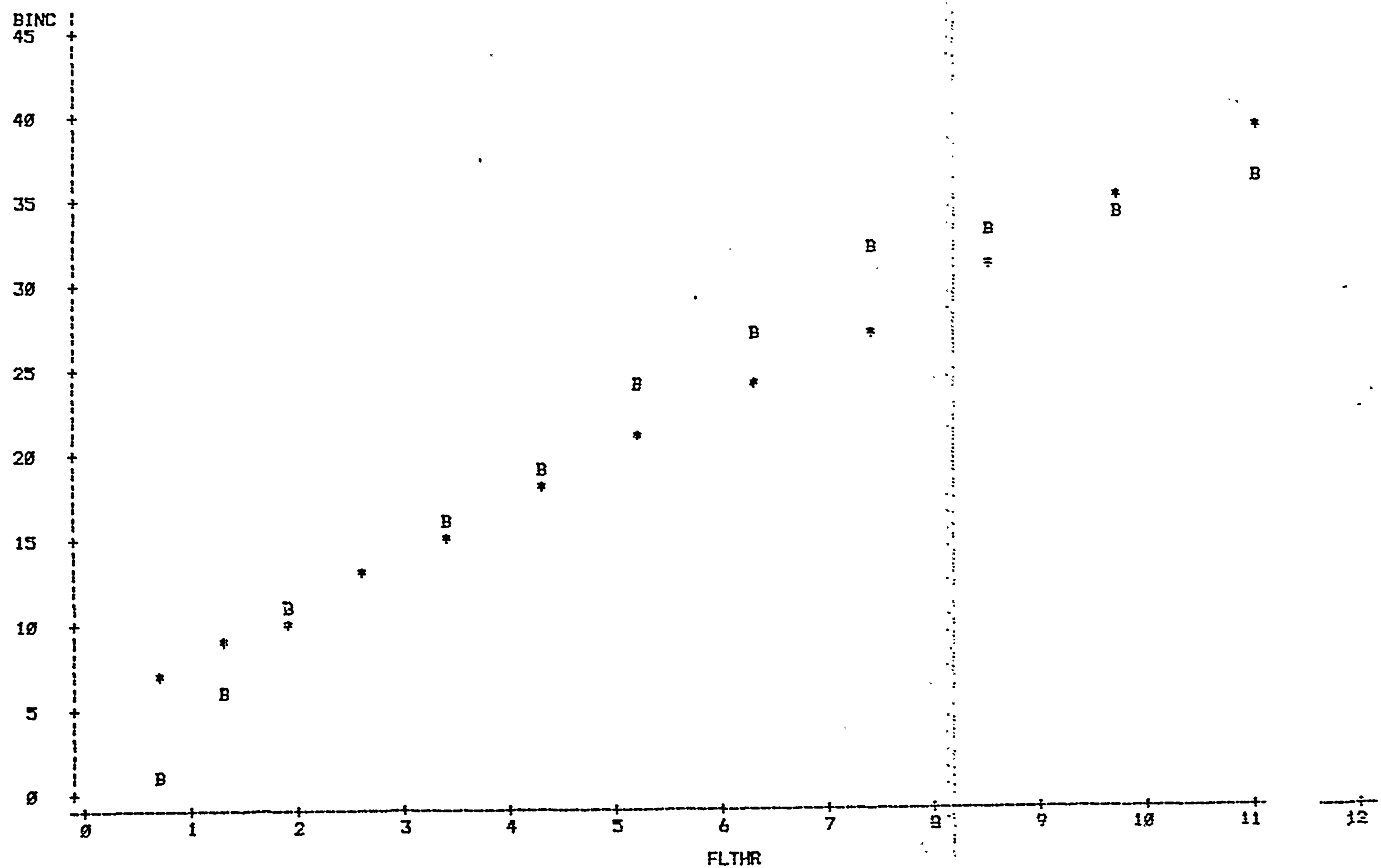
AH-1 CUM. ACTUAL & PRED. CLASS A INCIDENTS 1974 - 1987 10:01 FRIDAY, APRIL 1987

PLOT OF AINC*FLTHR SYMBOL USED IS A
PLOT OF PREDA*FLTHR SYMBOL USED IS *



AH-1 CUM. ACTUAL & PREDICTED CLASS B INCIDENTS 1974 - 1987 10:31 FRIDAY, APRIL 1987

PLOT OF BINC*FLTHR SYMBOL USED IS B
PLOT OF PREDB*FLTHR SYMBOL USED IS *



GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: AINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	914.57149660	914.57149660	814.49	0.0001	0.986675	8.
ERROR	11	12.35158032	1.12287094		ROOT MSE		AINC
CORRECTED TOTAL	12	926.92307692			1.05965695		.9230

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VAL	PR
FLTHR	1	914.57149660	814.49	0.0001		914.57149660	814.	0.

PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	-3.32228314	-5.45	0.0002	0.60969750
FLTHR	4.24216445	28.54	0.0001	0.14864270

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	0.00000000	-1.39634048	1.39634048	-2.61025799	-0.18242298
2	1.00000000	0.64414062	0.35585938	-0.43986375	1.72814498
3	2.00000000	2.78643366	-0.78643366	1.82991194	3.74293629
4	5.00000000	5.11962411	-0.11962411	4.28671798	5.95253023
5	5.00000000	7.58007949	-2.58007949	6.85164648	8.39851259
6	9.00000000	9.70116171	-0.70116171	9.03198725	10.37033618
7	13.00000000	11.99193052	1.00806948	11.34534616	12.63881487
8	15.00000000	14.40996425	0.59003575	13.73226770	15.03466089
9	17.00000000	16.23409496	0.76590504	15.50679268	16.96139725
10	19.00000000	18.56728541	0.43271459	17.74236071	19.39251011
11	21.00000000	20.81563257	0.18436743	19.87229113	21.75837461
12	23.00000000	22.97913644	0.02086356	21.90637570	24.04939717
13	25.00000000	25.56685675	-0.56685675	24.33169949	26.83201481

SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	12.35158032
SUM OF SQUARED RESIDUALS - ERROR SS	-0.00000000
PRESS STATISTIC	16.78566014
FIRST ORDER AUTOCORRELATION	0.25680240
DURBIN-WATSON D	1.30252453

CH-47 LINEAR FIT 10:01 FRIDAY, APRIL 1987

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: BINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	907.05812829	907.05812829	494.61	0.0001	0.978244	15.
ERROR	11	20.17264094	1.83387645		ROOT MSE		BINC
CORRECTED TOTAL	12	927.23076923			1.35420674		1.4615

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VAL	PR
FLTHR	1	907.05812829	494.61	0.0001	1	907.05812829	494.	0.

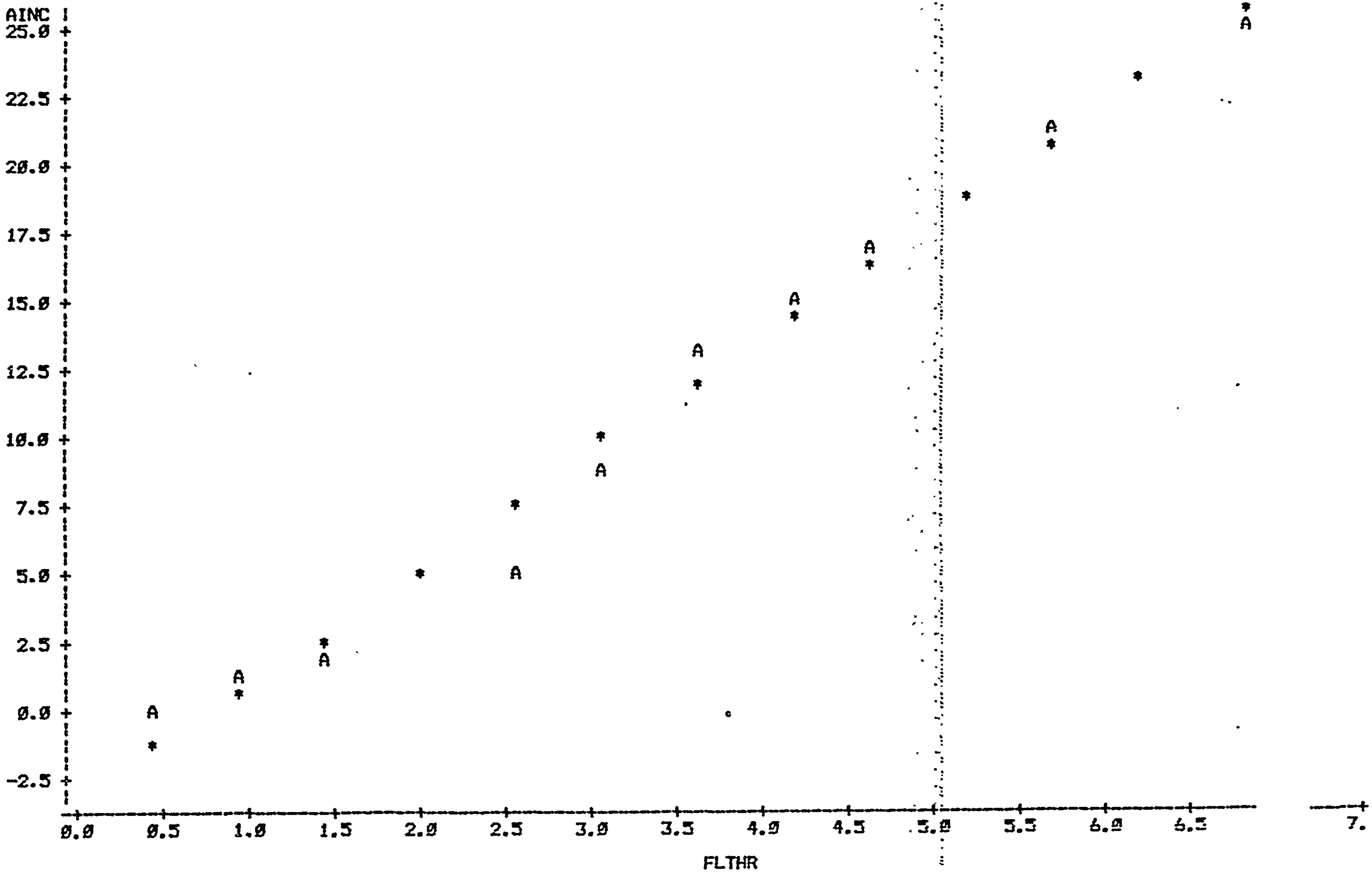
PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	-2.72107078	-3.49	0.0050	0.77917414
FLTHR	4.22470344	22.24	0.0001	0.18996068

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	1.00000000	-0.80305542	1.80305542	-2.35440363	0.74829279
2	2.00000000	1.22902694	0.77097306	-0.15629638	2.61435026
3	3.00000000	3.36250218	-0.36250218	2.14059649	4.58490787
4	6.00000000	5.68608907	0.31391093	4.62166136	6.75051678
5	8.00000000	8.13641707	-0.13641707	7.20550270	9.06733143
6	9.00000000	10.24876879	-1.24876879	9.39358497	11.10395261
7	11.00000000	12.53010865	-1.53010865	11.70341088	13.35680642
8	14.00000000	14.93818961	-0.93818961	14.07594874	15.80043048
9	16.00000000	16.75481209	-0.75481209	15.82534275	17.68428143
10	19.00000000	19.07839899	-0.07839899	18.02378789	20.13301009
11	20.00000000	21.31749181	-1.31749181	20.11269804	22.52228558
12	24.00000000	23.47209057	0.52790943	22.10433116	24.83984997
13	29.00000000	26.04915967	2.95084033	24.47066771	27.62765162

SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	20.17264094
SUM OF SQUARED RESIDUALS - ERROR SS	-0.00000000
PRESS STATISTIC	33.52556936
FIRST ORDER AUTOCORRELATION	0.39752207
DURBIN-WATSON D	0.79214961

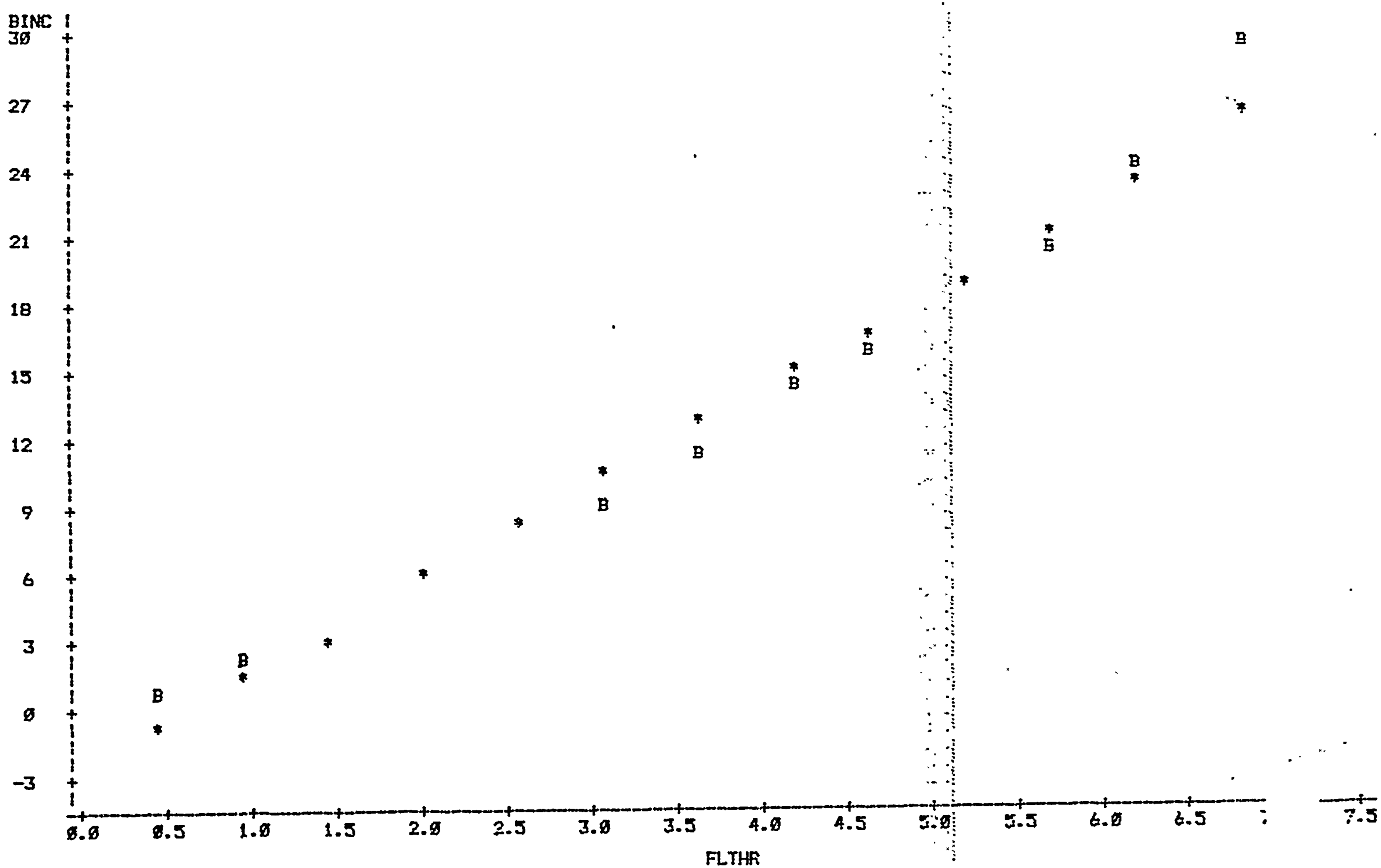
CH-47 CUM. ACTUAL & PRED. CLASS A INCIDENTS 1974-1983 10:01 FRIDAY, APRIL 1983

PLOT OF AINC*FLTHR SYMBOL USED IS A
PLOT OF PREDA*FLTHR SYMBOL USED IS *



CH-47 CUM. ACTUAL & PRED. CLASS B INCIDENTS 1974-1988 10:01 FRIDAY, APRIL 1989

PLOT OF BINC*FLTHR SYMBOL USED IS B
PLOT OF PREDB*FLTHR SYMBOL USED IS *



GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: AINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	14.63677567	14.63677567	70.42	0.0001	0.864930	23.
ERROR	11	2.28630125	0.20784557		ROOT MSE		AINC
CORRECTED TOTAL	12	16.92307692			0.45590093		.9230

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VAL	PR
FLTHR	1	14.63677567	70.42	0.0001	1	14.63677567	70.	0.

PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	-0.17533538	-0.63	0.5443	0.29020791
FLTHR	3.87106001	8.39	0.0001	0.46129376

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	0.00000000	0.14596260	-0.14596260	-0.39690417	0.68882938
2	0.00000000	0.49048695	-0.49048695	0.02290426	0.95806963
3	1.00000000	0.80404281	0.19595719	0.39957361	1.20851269
4	1.00000000	1.11759867	-0.11759867	0.76819372	1.46700362
5	1.00000000	1.45438089	-0.45438089	1.15013725	1.75862452
6	2.00000000	1.69825767	0.30174233	1.41377678	1.98273856
7	2.00000000	1.92665021	0.07334979	1.64834589	2.20495453
8	3.00000000	2.16665593	0.83334407	1.88111461	2.45219725
9	3.00000000	2.43375907	0.56624093	2.12490166	2.74261649
10	3.00000000	2.72021751	0.27978249	2.37213042	3.06079449
11	3.00000000	3.02216019	-0.02216019	2.62147192	3.42284846
12	3.00000000	3.34345817	-0.34345817	2.87844475	3.80847169
13	3.00000000	3.67636933	-0.67636933	3.13885754	4.21388113

SUM OF RESIDUALS	0.00000000
SUM OF SQUARED RESIDUALS	2.28630125
SUM OF SQUARED RESIDUALS - ERROR SS	-0.00000000
PRESS STATISTIC	3.27853696
FIRST ORDER AUTOCORRELATION	0.35692341
DURBIN-WATSON D	1.07674045

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: BINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	C.V.
MODEL	1	1.75611497	1.75611497	19.07	0.0011	0.634153	93.
ERROR	11	1.01311580	0.09210144		ROOT MSE		BINC
CORRECTED TOTAL	12	2.76923077			0.30348218		0.3076

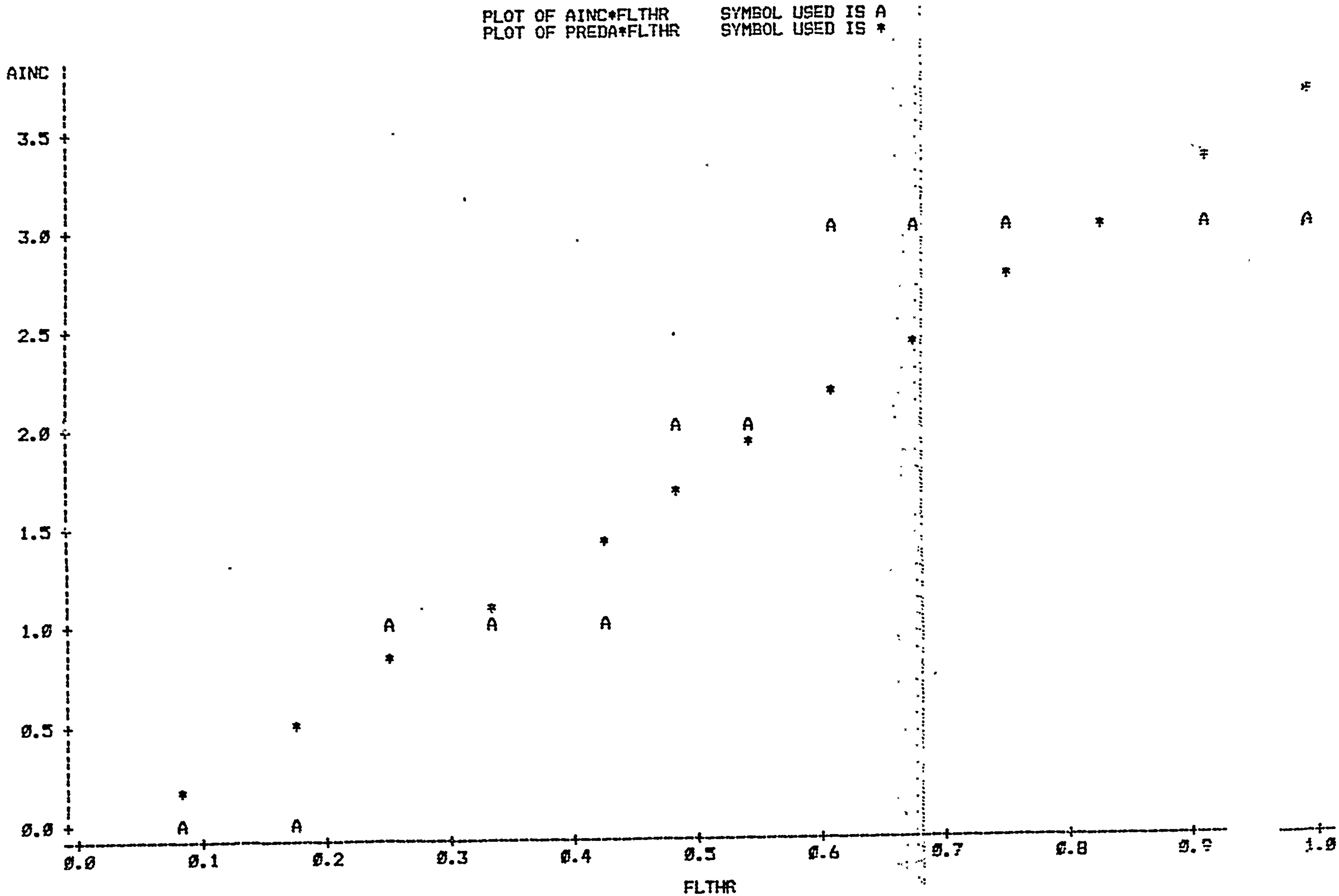
SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VAL	PR
FLTHR	1	1.75611497	19.07	0.0011	1	1.75611497	19.	0.

PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	-0.41915734	-2.25	0.0461	0.18652765
FLTHR	1.34086072	4.37	0.0011	0.30707213

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	0.00000000	-0.30786591	0.30786591	-0.66923922	0.05350741
2	0.00000000	-0.18852930	0.18852930	-0.49978781	0.12272921
3	0.00000000	-0.07991958	0.07991958	-0.34916497	0.18932580
4	0.00000000	0.02869014	-0.02869014	-0.20390031	0.26128058
5	0.00000000	0.14534502	-0.14534502	-0.05718263	0.34787265
6	0.00000000	0.22981924	-0.22981924	0.04044718	0.41919131
7	0.00000000	0.30893003	-0.30893003	0.12366956	0.49419059
8	0.00000000	0.39206339	-0.39206339	0.20198542	0.58214136
9	0.00000000	0.48458278	-0.48458278	0.27898385	0.69019171
10	1.00000000	0.58380647	0.41619353	0.35209329	0.81551965
11	1.00000000	0.68839361	0.31160639	0.42166510	0.95512212
12	1.00000000	0.79968505	0.20031495	0.49613683	1.10323327
13	1.00000000	0.91499707	0.08500293	0.55719844	1.27285770

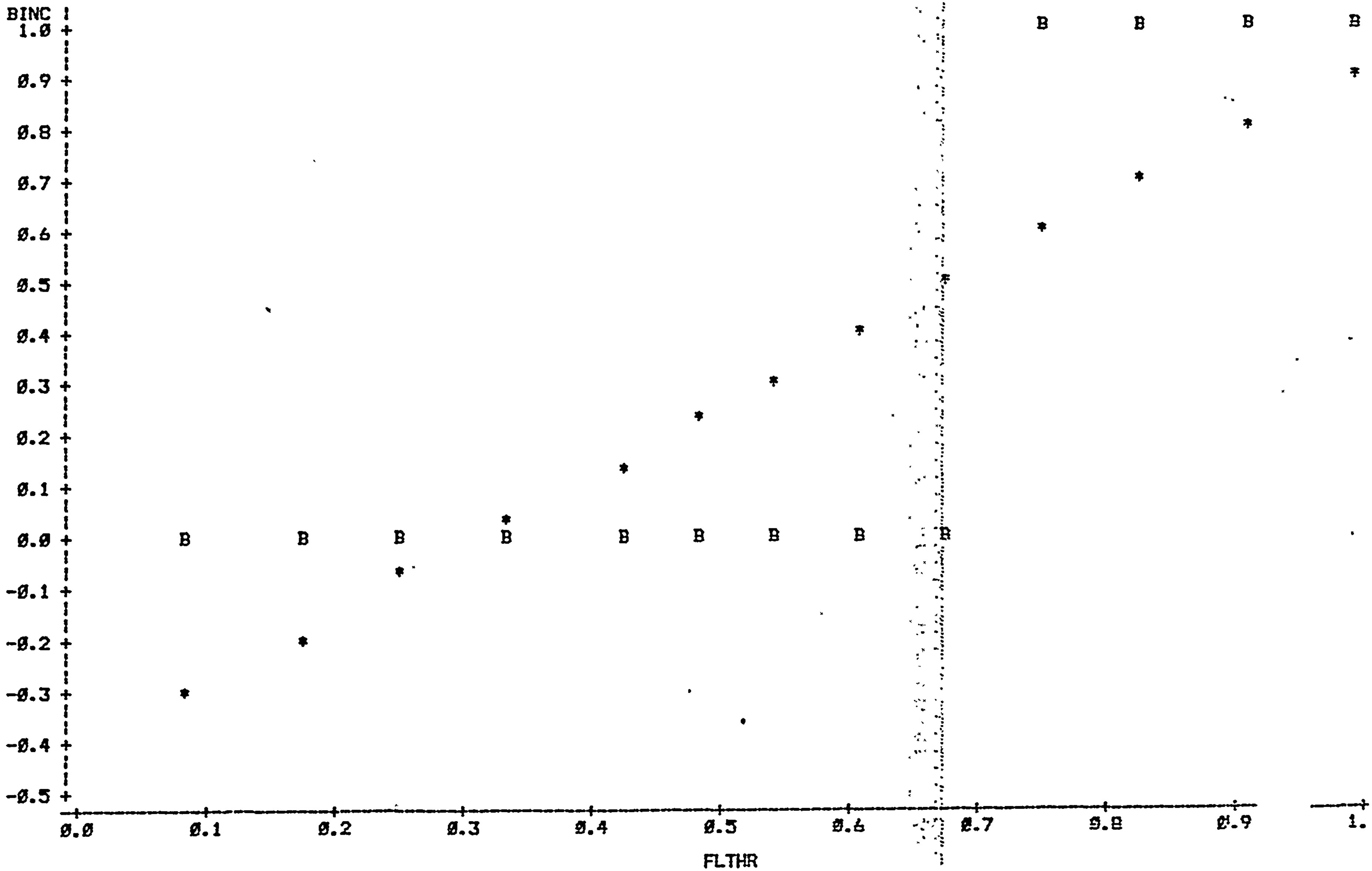
SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	1.01311580
SUM OF SQUARED RESIDUALS - ERROR SS	-0.00000000
PRESS STATISTIC	1.36609674
FIRST ORDER AUTOCORRELATION	0.47150273
DURBIN-WATSON D	0.91632854

CH-54 CUM. ACTUAL & PRED. CLASS A INCIDENTS 1974-1988 10:01 FRIDAY, APRIL 1989



CH-54 CUM. ACTUAL & PRED. CLASS B INCIDENTS 1974-1988 10:01 FRIDAY, APRIL , 1987

PLOT OF BINC*FLTHR SYMBOL USED IS B
PLOT OF PREDB*FLTHR SYMBOL USED IS *



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                                       OH-6 LI[illegible]R FIT                              10:01 FRIDAY, APRIL [illegible]89

                                   GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: AINC

SOURCE                 DF        SUM OF SQUARES        MEAN SQUARE        F VALUE         PR > F       R-SQUARE

MODEL                   1           99.39306912        99.39306912         309.72         0.0001       0.965752          6.

ERROR                  11            3.53000780         0.32090980                        ROOT MSE                     AINC

CORRECTED TOTAL        12          102.92307692                                         0.56648991                     .9230

SOURCE                 DF              TYPE I SS        F VALUE      PR > F      DF        TYPE III SS       F VAL       PR

FLTHR                   1            99.39306912         309.72      0.0001       1        99.39306912       309.        0.

                                          T FOR H0:        PR > |T|          STD ERROR OF
PARAMETER                 ESTIMATE    PARAMETER=0                              ESTIMATE

INTERCEPT               3.65510950          10.81          0.0001            0.33806273
FLTHR                   2.34211958          17.60          0.0001            0.13308298

OBSERVATION              OBSERVED           PREDICTED              RESIDUAL       LOWER 95% CL      UPPER 95% CL
                           VALUE               VALUE                                FOR MEAN          FOR MEAN

      1                 4.00000000          4.36242961           -0.36242961       3.69541379        5.02944543
      2                 5.00000000          5.14469755           -0.14469755       4.55913939        5.73025571
      3                 5.00000000          5.97849212           -0.97849212       5.47331726        6.48366698
      4                 8.00000000          6.74670734            1.25329266       6.30662777        7.18678692
      5                 8.00000000          7.42592202            0.57407798       7.03267401        7.81917003
      6                 8.00000000          8.19882148           -0.19882148       7.84134484        8.55629813
      7                 9.00000000          8.97172095            0.02827905       8.62585661        9.31758528
      8                10.00000000          9.8[illegible]488399            0.18511601       9.45133193       10.17823606
      9                11.00000000         10.[illegible]462585            0.36537415      10.22792711       11.04132458
     10                11.00000000         11.26699813           -0.26699813      10.81365914       11.72033713
     11                12.00000000         11.85252803            0.14747197      11.34873123       12.35632483
     12                12.00000000         12.43805792           -0.43805792      11.87874489       12.99737096
     13                13.00000000         13.16411499           -0.16411499      12.53094013       13.79728986

          SUM OF RESIDUALS                                   -0.00000000
          SUM OF SQUARED RESIDUALS                            3.53000780
          SUM OF SQUARED RESIDUALS - ERROR SS                -0.0000[illegible]00
          PRESS STATISTIC                                     4.850[illegible]281
          FIRST ORDER AUTOCORRELATION                        -0.13862563
          DURBIN-WATSON D                                     2.23241029
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GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: BINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	2.45875083	2.45875083	35.03	0.0001	0.761042	57.
ERROR	11	0.77201841	0.07018349		ROOT MSE		BINC
CORRECTED TOTAL	12	3.23076923			0.26492167		1.4615

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VAL	PR
FLTHR	1	2.45875083	35.03	0.0001	1	2.45875083	35.	0.

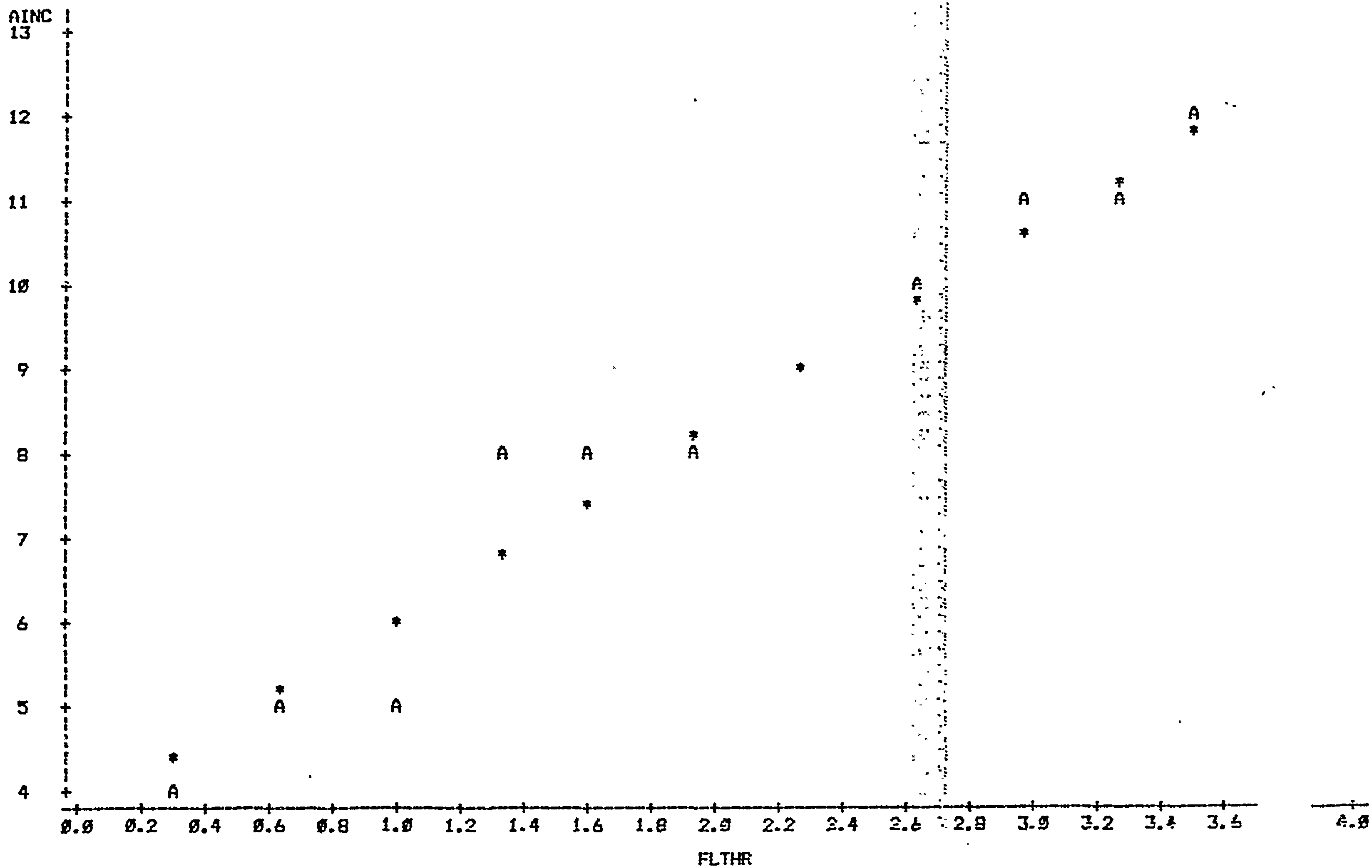
PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	-0.36701835	-2.32	0.0405	0.15809687
FLTHR	0.36837341	5.92	0.0001	0.06223698

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	0.00000000	-0.25576958	0.25576958	-0.56770315	0.05616480
2	0.00000000	-0.13273286	0.13273286	-0.40657232	0.14118669
3	0.00000000	-0.00159192	0.00159192	-0.23753970	0.23465565
4	0.00000000	0.11923455	-0.11923455	-0.08657105	0.32504015
5	0.00000000	0.22606284	-0.22606284	0.04215827	0.42996742
6	0.00000000	0.34762607	-0.34762607	0.18645017	0.51488197
7	0.00000000	0.46918929	-0.46918929	0.30744395	0.63093463
8	1.00000000	0.60180372	0.39819628	0.43158815	0.77172729
9	1.00000000	0.73073441	0.26926559	0.54653754	0.92092929
10	1.00000000	0.83019524	0.16980476	0.61818579	1.04228168
11	1.00000000	0.92228859	0.07771141	0.68658527	1.15787193
12	1.00000000	1.01438194	-0.01438194	0.75281615	1.27594773
13	1.00000000	1.12857770	-0.12857770	0.83247502	1.42468537

SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	0.77201841
SUM OF SQUARED RESIDUALS - ERROR SS	-0.00000000
PRESS STATISTIC	0.99820169
FIRST ORDER AUTOCORRELATION	0.35612315
DURBIN-WATSON D	1.16169297

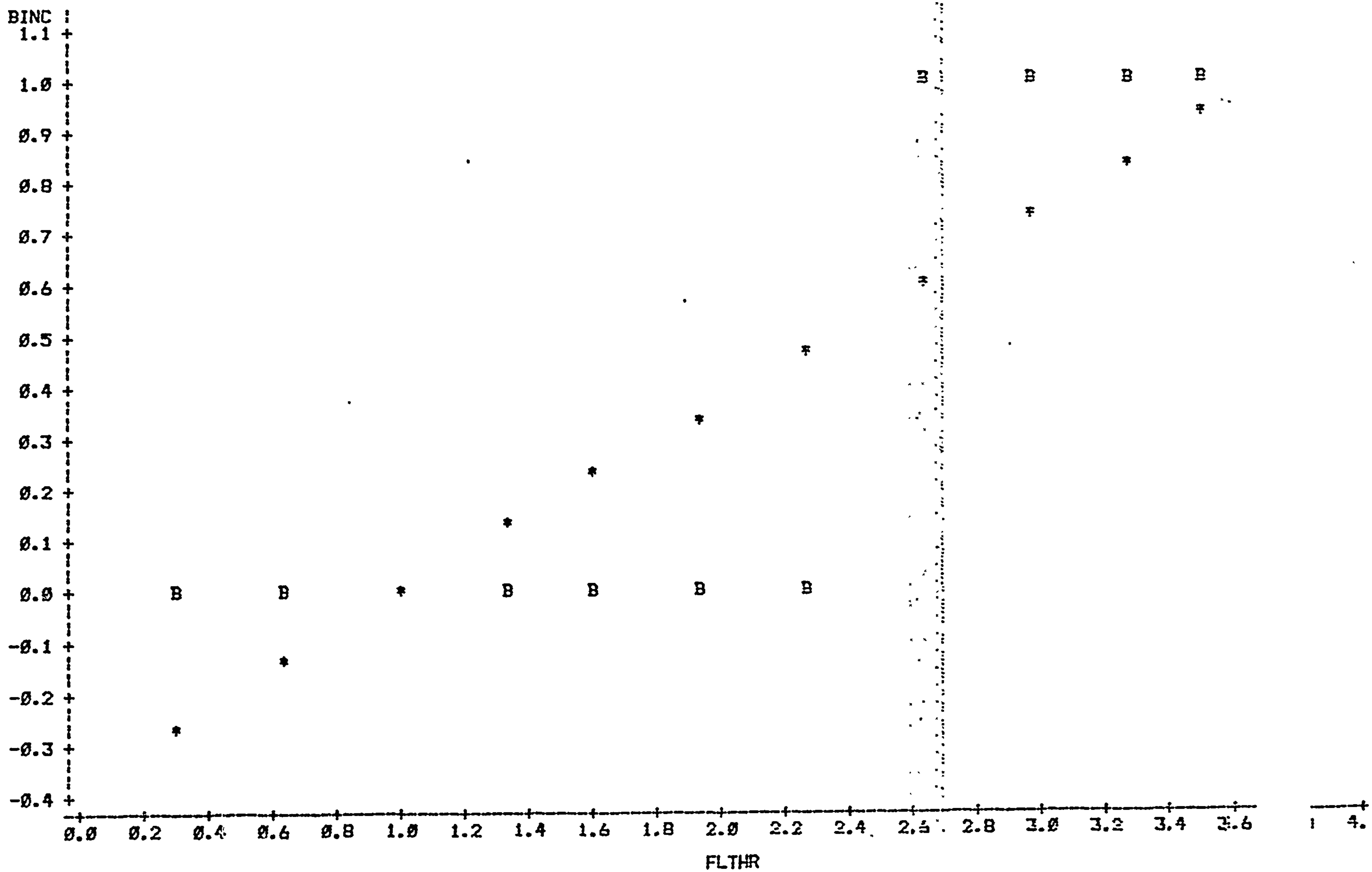
OH-6 CUM. ACTUAL & PRED. CLASS A INCIDENTS 1974-1988 10:01 FRIDAY, APRIL

PLOT OF AINC*FLTHR SYMBOL USED IS A
PLOT OF PREDA*FLTHR SYMBOL USED IS *



OH-6 CUM. ACTUAL & PRED. CLASS B INCIDENTS 1974-1988 10:31 FRIDAY, APRIL

PLOT OF BINC*FLTHR SYMBOL USED IS B
PLOT OF PREDB*FLTHR SYMBOL USED IS *



GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: AINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	17943.07648916	17943.07648916	1364.82	0.0001	0.992055	5.
ERROR	11	144.61581853	13.14689259		ROOT MSE		AINC
CORRECTED TOTAL	12	18087.69230769			3.62586439		-.1538

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VAL	PR
FLTHR	1	17943.07648916	1364.82	0.0001	1	17943.07648916	1364.	0.

PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	-7.54014237	-3.45	0.0054	2.18572598
FLTHR	3.43868747	36.94	0.0001	0.09307988

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	9.00000000	3.22294940	5.77705060	-1.02873137	7.47463017
2	15.00000000	14.26113616	0.73886384	10.55509382	17.96717851
3	27.00000000	24.33649044	2.66350956	21.09203029	27.58095059
4	33.00000000	34.75571346	-1.75571346	31.93317148	37.57825544
5	40.00000000	45.07177586	-5.07177586	42.58349046	47.56006127
6	50.00000000	54.70010077	-4.70010077	52.41617008	56.98403145
7	61.00000000	64.32842567	-3.32842567	62.11500761	66.54184373
8	74.00000000	74.98835682	-0.98835682	72.68276105	77.29395259
9	82.00000000	84.61668172	-2.61668172	82.08975209	87.14361135
10	98.00000000	94.24500663	3.75499337	91.39665976	97.09335350
11	105.00000000	103.52946279	1.47053721	100.30419508	106.75473049
12	117.00000000	112.81391895	4.18608105	109.16651430	116.46132359
13	123.00000000	123.12998134	-0.12998134	118.97729187	127.28267081

SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	144.61581853
SUM OF SQUARED RESIDUALS - ERROR SS	-0.00000000
PRESS STATISTIC	210.19523846
FIRST ORDER AUTOCORRELATION	0.39504836
DURBIN-WATSON D	0.97900732

*OH-5B L[illegible]AR FIT 10:31 FRIDAY, APRIL [illegible]787

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: BINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	7.88853637	7.88853637	83.88	0.0001	0.884050	33.
ERROR	11	1.03454055	0.09404914		ROOT MSE		BINC
CORRECTED TOTAL	12	8.92307692			0.30667432		1.9230

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VAL	PR
FLTHR	1	7.88853637	83.88	0.0001	1	7.88853637	83.	0.

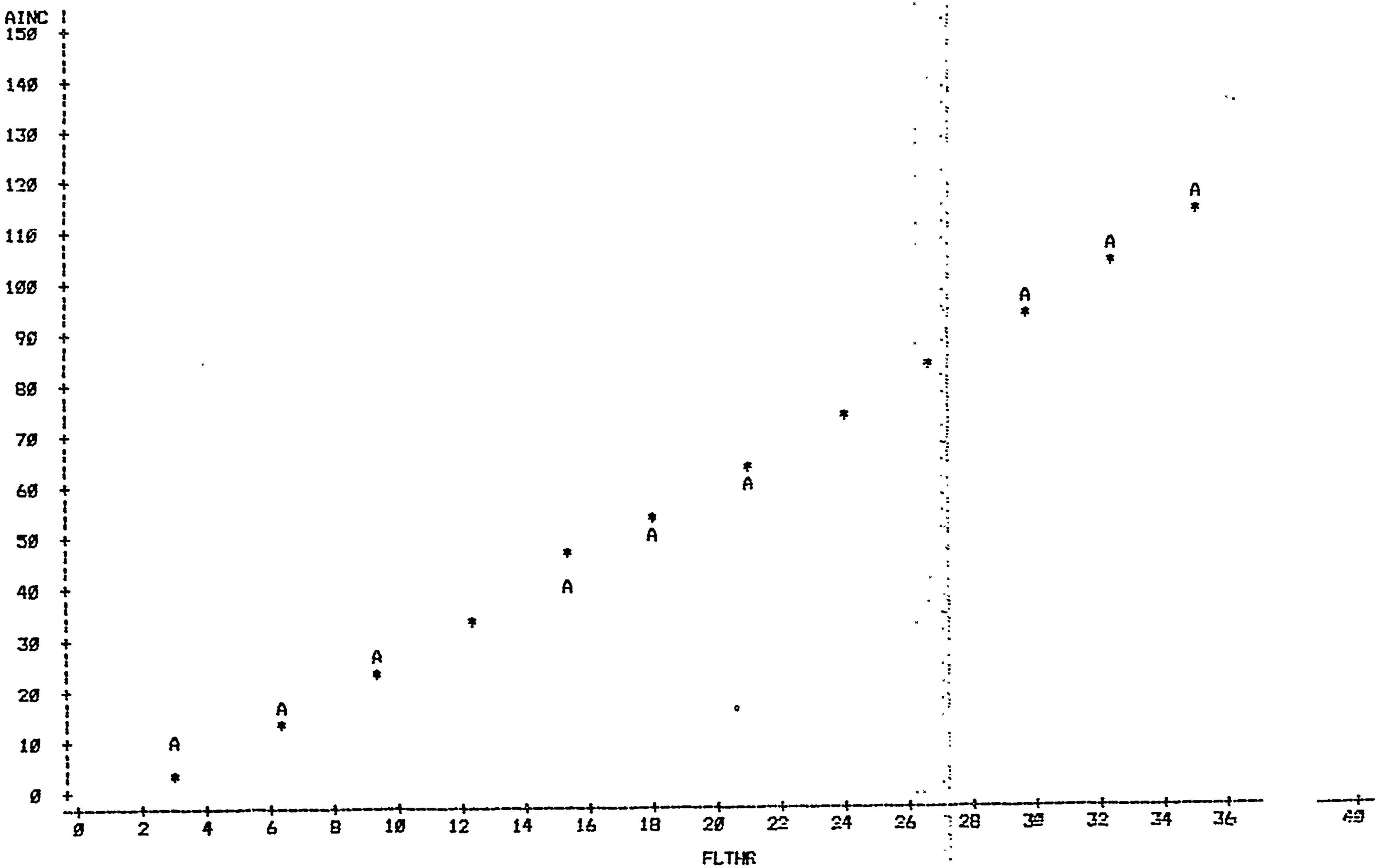
PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	-0.58017755	-3.14	0.0094	0.18486793
FLTHR	0.07210120	9.16	0.0001	0.00787266

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	0.00000000	-0.35450080	0.35450080	-0.71410646	0.00510485
2	0.00000000	-0.12305597	0.12305597	-0.43651171	0.19039978
3	0.00000000	0.08820054	-0.08820054	-0.18621475	0.36261583
4	0.00000000	0.30666716	-0.30666716	0.06793756	0.54539676
5	0.00000000	0.52297075	-0.52297075	0.31251245	0.73342905
6	1.00000000	0.72485410	0.27514590	0.53168005	0.91802814
7	1.00000000	0.92673745	0.07326255	0.73952733	1.11394756
8	1.00000000	1.15025115	-0.15025115	0.95524468	1.34525762
9	1.00000000	1.35213450	-0.35213450	1.13840769	1.56586131
10	2.00000000	1.55401785	0.44598215	1.31310568	1.79493002
11	2.00000000	1.74869108	0.25130892	1.47589708	2.02148363
12	2.00000000	1.94336431	0.05663569	1.63486811	2.25186059
13	2.00000000	2.15966789	-0.15966789	1.80843489	2.51090099

SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	1.03454055
SUM OF SQUARED RESIDUALS - ERROR SS	-0.00000000
PRESS STATISTIC	1.41989[illegible]
FIRST ORDER AUTOCORRELATION	0.07529371
DURBIN-WATSON D	1.66329491

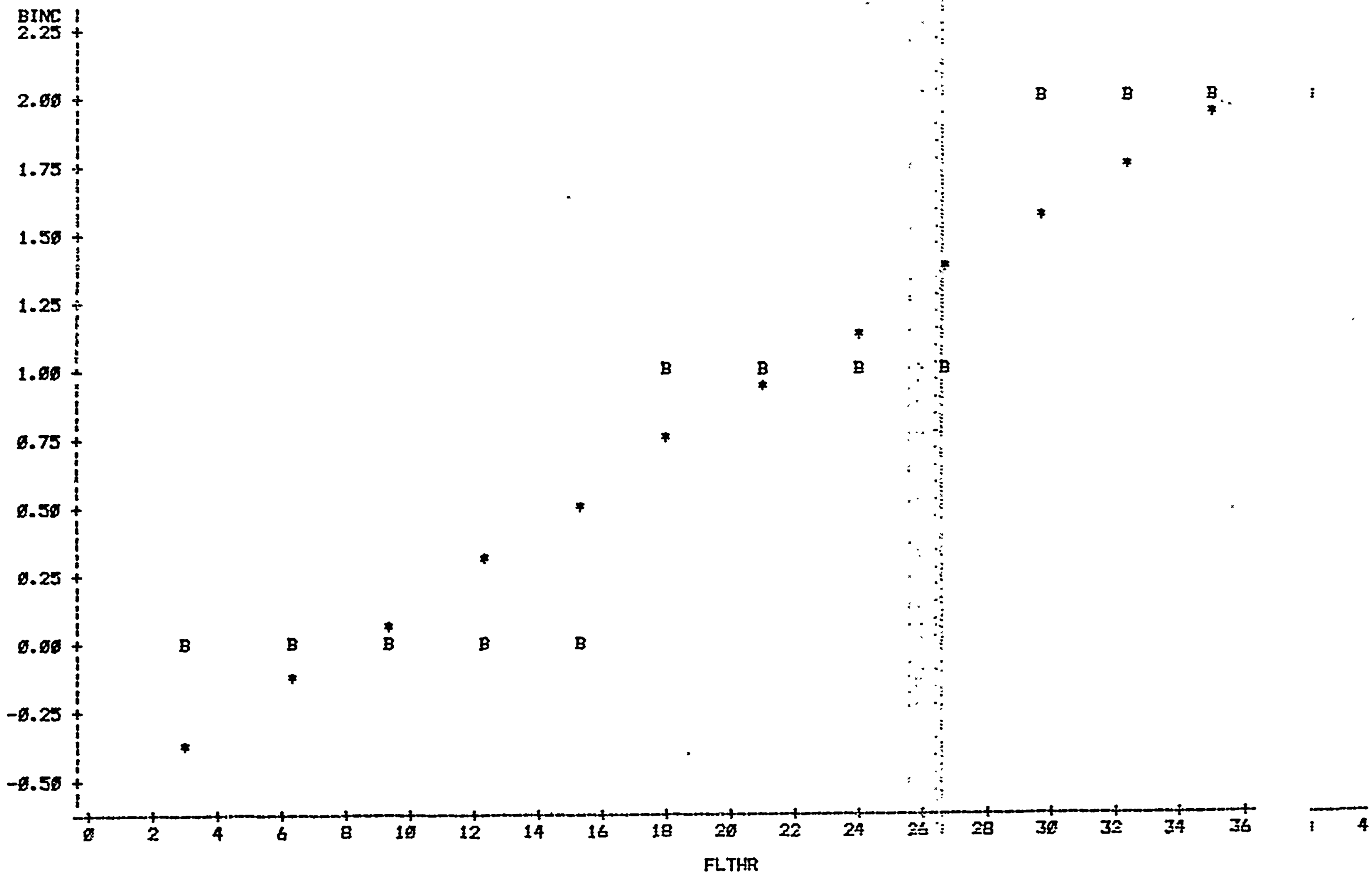
OH-58 CUM. ACTUAL & PRED. CLASS A INCIDENTS 1974-1988 10:01 FRIDAY, APRIL 1989

PLOT OF AINC*FLTHR SYMBOL USED IS A
PLOT OF PREDA*FLTHR SYMBOL USED IS *



OH-58 CUM. ACTUAL & PRED. [illegible]SS B INCIDENTS 1974-1988 10:01 FRIDAY, APRIL [illegible]

PLOT OF BINC*FLTHR SYMBOL USED IS B
PLOT OF PREDB*FLTHR SYMBOL USED IS *



GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: AINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	178.39456002	178.39456002	14.67	0.0033	0.594649	12.
ERROR	10	121.60543998	12.16054400		ROOT MSE		AINC
CORRECTED TOTAL	11	300.00000000			3.48719716		1.0000

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VAL	PR
FLTHR	1	178.39456002	14.67	0.0033	1	178.39456002	14.	0.

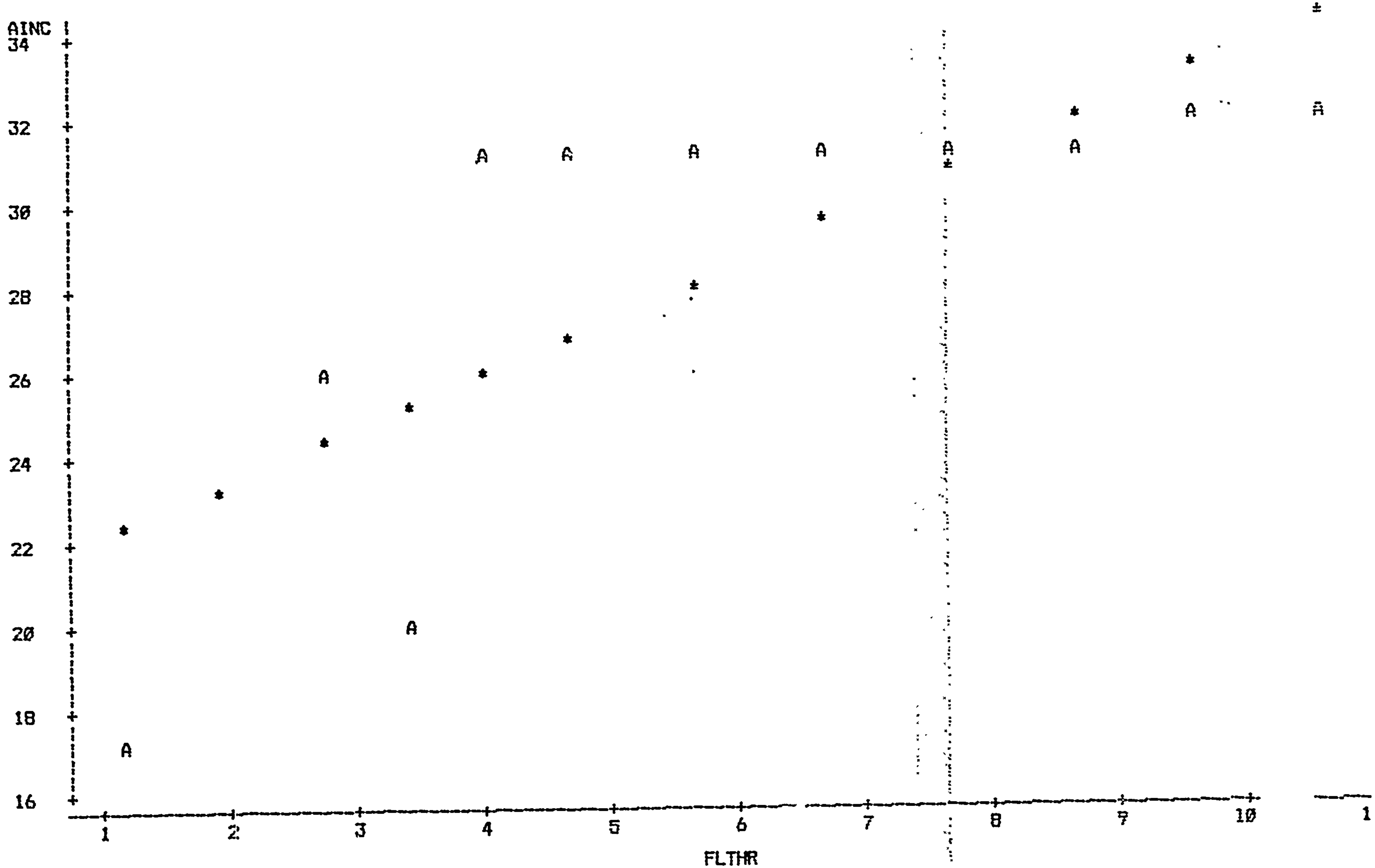
PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > !T!	STD ERROR OF ESTIMATE
INTERCEPT	20.74208440	9.67	0.0001	2.14574272
FLTHR	1.30577192	3.83	0.0033	0.34092043

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	17.00000000	22.29593299	-5.29593299	18.20969321	26.38121276
2	23.00000000	23.27528193	-0.27528193	19.72764678	26.82291707
3	26.00000000	24.35907262	1.64092738	21.27495145	27.44409380
4	20.00000000	25.20782437	-5.20782437	22.43843394	27.97721481
5	31.00000000	25.91294121	5.08705879	23.36241212	28.46347030
6	31.00000000	26.80086612	4.19913388	24.45188477	29.14984746
7	31.00000000	28.11969576	2.88030424	25.87560699	30.36378453
8	31.00000000	29.41240996	1.58759004	27.02364275	31.80117718
9	31.00000000	30.75735504	0.24264496	27.99979680	33.51491329
10	31.00000000	32.03701153	-1.03701153	28.78946773	35.28455533
11	32.00000000	33.23832169	-1.23832169	29.45448111	37.02216228
12	32.00000000	34.58326677	-2.58326677	30.14500288	39.02153067

SUM OF RESIDUALS	0.00000000
SUM OF SQUARED RESIDUALS	121.60543998
SUM OF SQUARED RESIDUALS - ERROR SS	0.00000000
PRESS STATISTIC	177.32972975
FIRST ORDER AUTOCORRELATION	0.07083090
DURBIN-WATSON D	1.57282149

TH-55 CUM. ACTUAL & PRED. CLASS A INCIDENTS 1974-1983 10:01 FRIDAY, APRIL 1987

PLOT OF AINC*FLTHR SYMBOL USED IS A
PLOT OF PREDA*FLTHR SYMBOL USED IS *



*UH-60 L[illegible]AR FIT   10:01 FRIDAY, APRIL [illegible]87

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: AINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	[illegible]
MODEL	1	795.21055469	795.21055469	169.76	0.0001	0.960399	23.
ERROR	7	32.78944531	4.68420647		ROOT MSE		AINC
CORRECTED TOTAL	8	828.00000000			2.16430277		1.6666

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VAL	PR
FLTHR	1	795.21055469	169.76	0.0001	1	795.21055469	169.	0.

PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	-0.79950701	-0.70	0.5050	1.13794244
FLTHR	5.13053411	13.03	0.0001	0.39376719

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	0.00000000	-0.61480778	0.61480778	-3.27979756	2.05018199
2	0.00000000	0.54982346	-0.54982346	-1.95643680	3.05608373
3	1.00000000	2.61229817	-1.61229817	0.36575961	4.85883674
4	4.00000000	5.45974460	-1.45974460	3.50956399	7.40992522
5	9.00000000	8.94850780	0.05149220	7.21430898	10.68270662
6	14.00000000	13.00162975	0.99837025	11.24355055	14.75945894
7	21.00000000	17.00344635	3.99655365	14.94697078	19.05982192
8	21.00000000	19.97915614	1.02084386	17.57778196	22.38053031
9	26.00000000	29.06020151	-3.06020151	25.31139408	32.80900894

SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	32.78944531
SUM OF SQUARED RESIDUALS - ERROR SS	-0.00000000
PRESS STATISTIC	77.46405014
FIRST ORDER AUTOCORRELATION	0.23861763
DURBIN-WATSON D	1.22563188

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: BINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	96.87877384	96.87877384	92.35	0.0001	0.929540	23.
ERROR	7	7.34344838	1.04906405		ROOT MSE		BINC
CORRECTED TOTAL	8	104.22222222			1.02423828		-.4444

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VAL	PR
FLTHR	1	96.87877384	92.35	0.0001	1	96.87877384	92.	0.

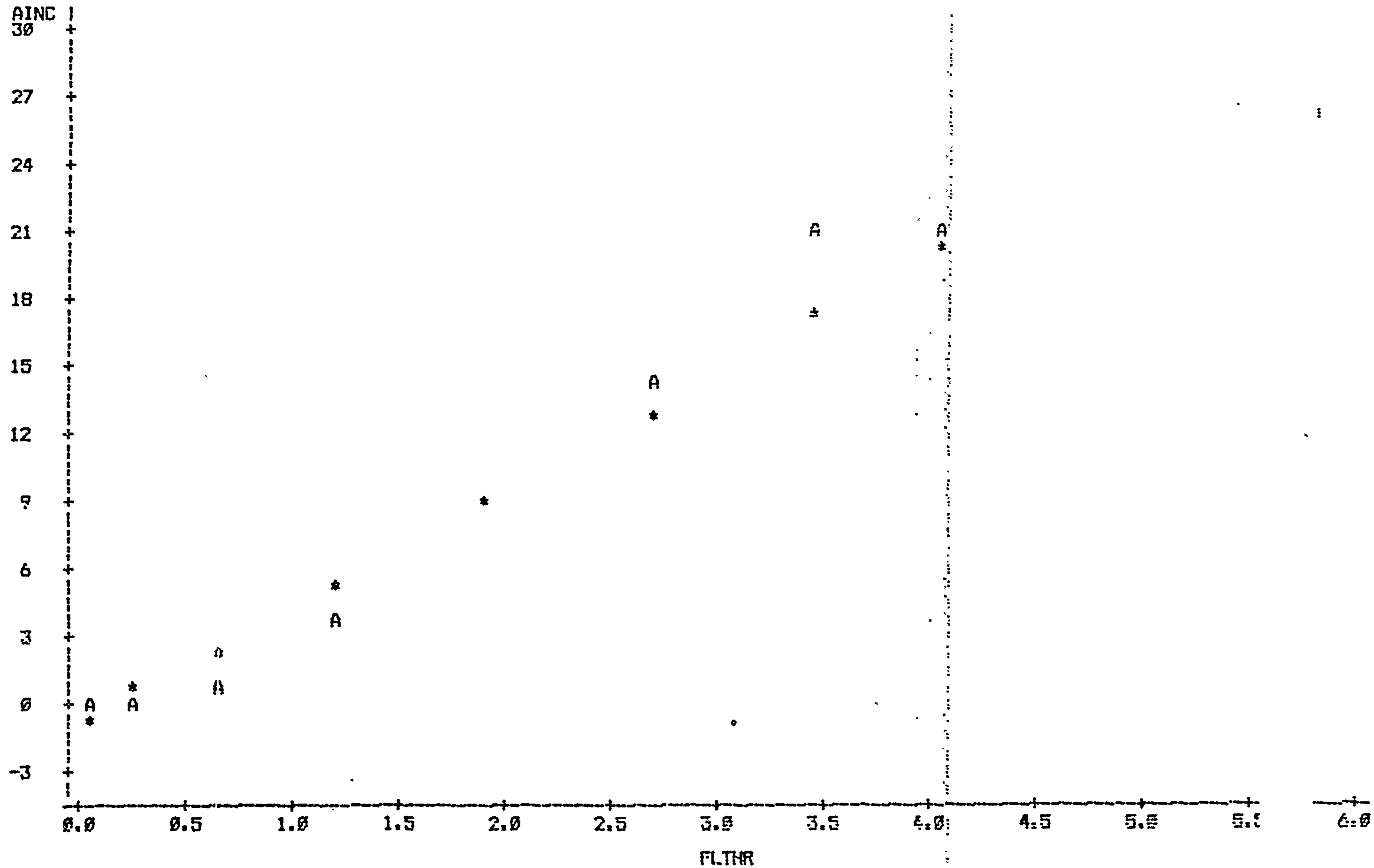
PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	0.44230916	0.82	0.4385	0.[illegible]3852179
FLTHR	1.79075358	9.61	0.0001	0.18634705

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	0.00000000	0.50677629	-0.50677629	-0.75440795	1.76796053
2	0.00000000	0.91327736	-0.91327736	-0.27278946	2.09934418
3	1.00000000	1.63316030	-0.63316030	0.57000461	2.69631598
4	3.00000000	2.62702853	0.37297147	1.70412178	3.54993528
5	5.00000000	3.84474097	1.15525903	3.02404580	4.66543613
6	7.00000000	5.25943630	1.74056370	4.42738192	6.09129068
7	7.00000000	6.65622409	0.34377591	5.68238822	7.62983996
8	7.00000000	7.69486117	-0.69486117	6.55843082	8.83129152
9	10.00000000	10.86449500	-0.86449500	9.09040307	12.63858693

SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	7.34344838
SUM OF SQUARED RESIDUALS - ERROR SS	0.00000000
PRESS STATISTIC	12.77152958
FIRST ORDER AUTOCORRELATION	0.57286431
DURBIN-WATSON D	0.71752729

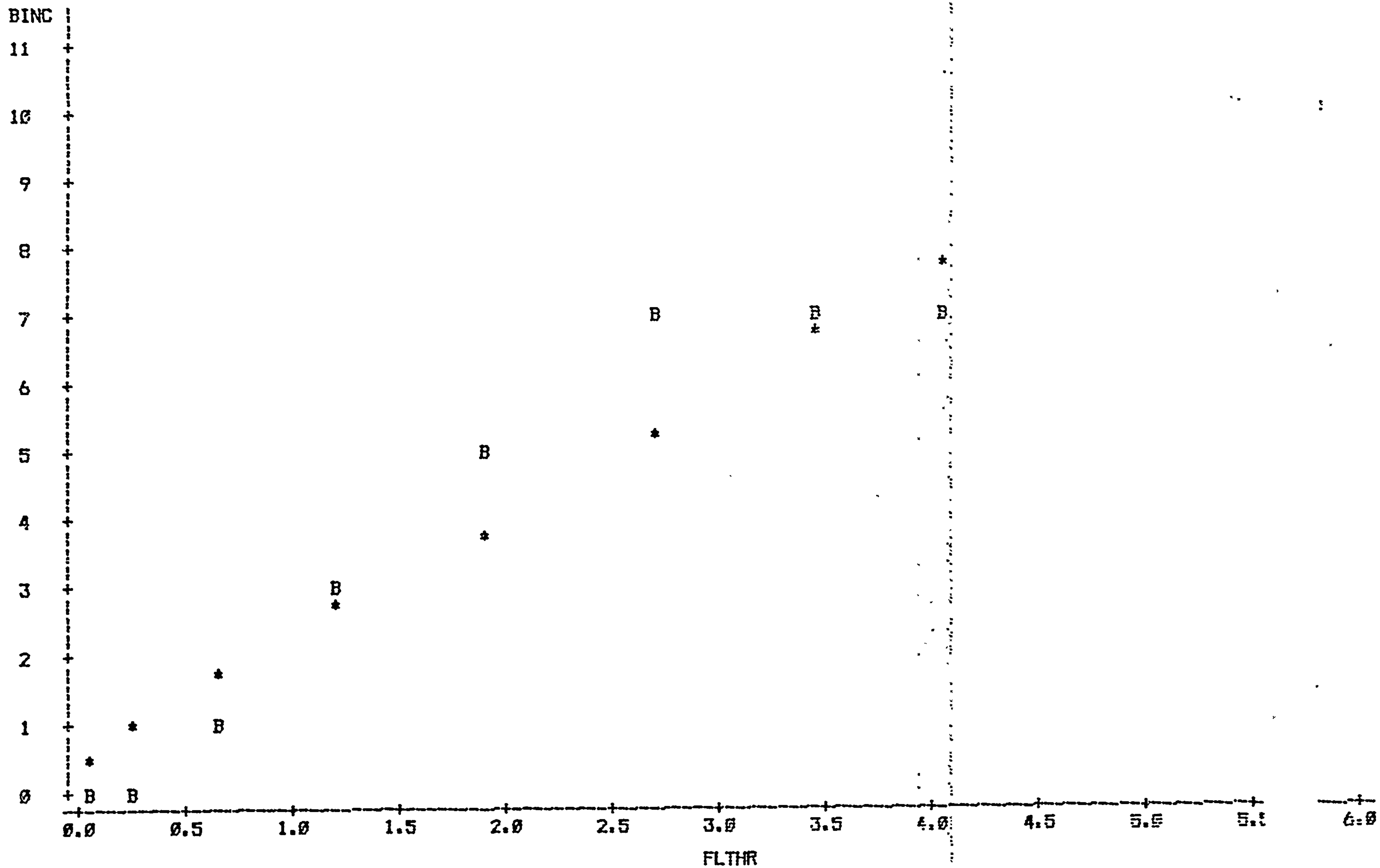
UH-60 CUM. ACTUAL & PRED. CLASS A INCIDENTS 1979-1988 10:01 FRIDAY, APRIL 1987

PLOT OF AINC*FLTHR SYMBOL USED IS A
PLOT OF PREDA*FLTHR SYMBOL USED IS *



UH-60 CUM. ACTUAL & PRED. [illegible]SS B INCIDENTS 1977-1983 10:01 FRIDAY, APRIL [illegible]987

PLOT OF BINC*FLTHR SYMBOL USED IS B
PLOT OF PREDB*FLTHR SYMBOL USED IS *



GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: BINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	8.26541247	8.26541247	54.26	0.0001	0.857731	47.
ERROR	9	1.37095117	0.15232791		ROOT MSE		BINC
CORRECTED TOTAL	10	9.63636364			0.39029258		1.8181

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VAL	PR
FLTHR	1	8.26541247	54.26	0.0001	1	8.26541247	54.	0.

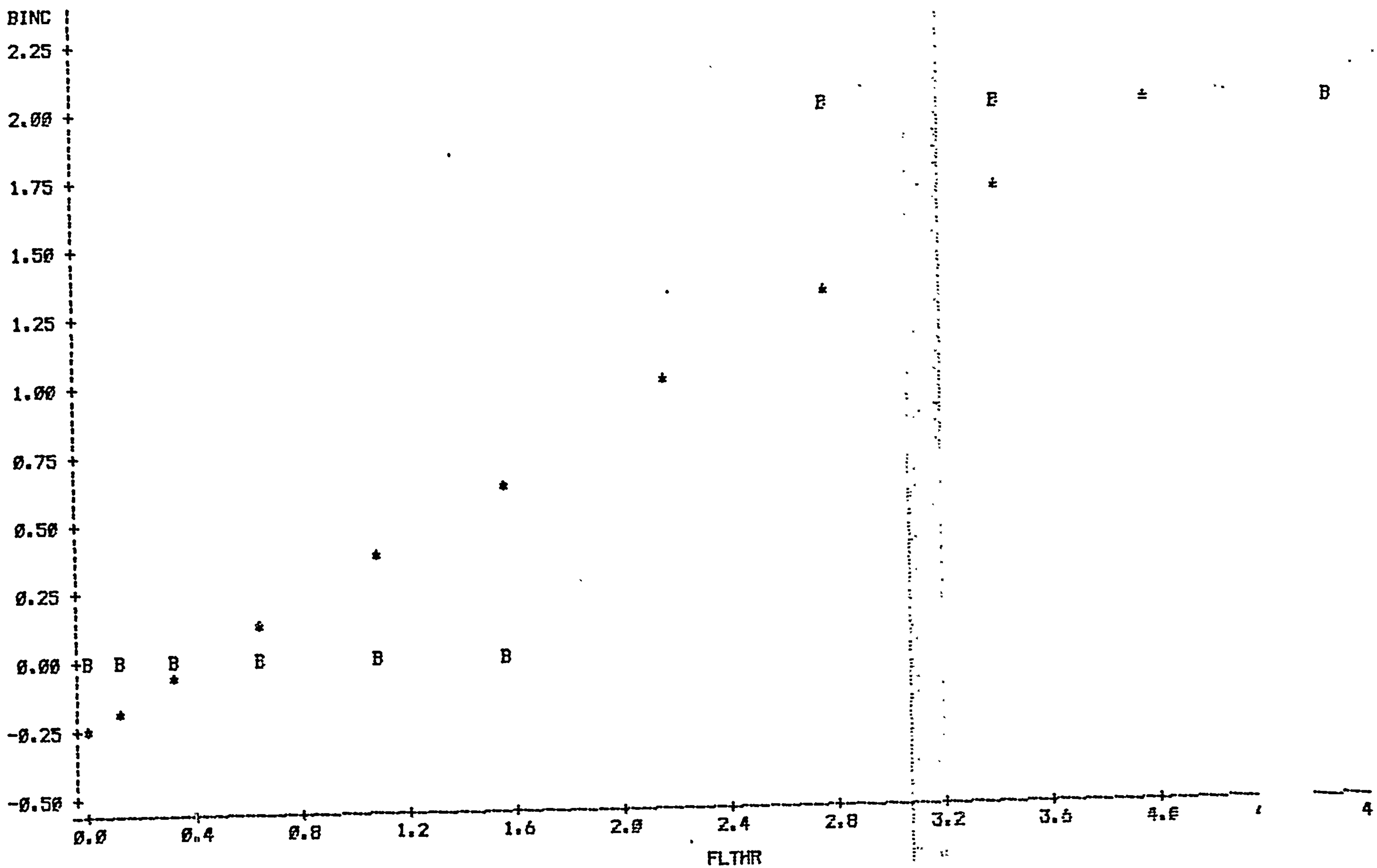
PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	-0.22773622	-1.23	0.2481	0.18441584
FLTHR	0.55839150	7.37	0.0001	0.07580472

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	0.00000000	-0.22326909	0.22326909	-0.63939310	0.19285493
2	0.00000000	-0.16910511	0.16910511	-0.57259466	0.23437444
3	0.00000000	-0.05351807	0.05351807	-0.43155610	0.32401395
4	0.00000000	0.12349203	-0.12349203	-0.21765425	0.44463832
5	0.00000000	0.36974268	-0.36974268	0.07682238	0.66946298
6	0.00000000	0.64893843	-0.64893843	0.37770475	0.92017211
7	1.00000000	0.97838942	0.02161058	0.70767378	1.24915565
8	2.00000000	1.31900823	0.68099177	1.01156335	1.62645318
9	2.00000000	1.65962704	0.34037296	1.28652547	2.03062862
10	2.00000000	1.97791020	0.02208980	1.53326048	2.42255991
11	2.00000000	2.36878424	-0.36878424	1.82323175	2.91433674

SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	1.37095117
SUM OF SQUARED RESIDUALS - ERROR SS	-0.00000000
PRESS STATISTIC	1.97028375
FIRST ORDER AUTOCORRELATION	0.49676429
DURBIN-WATSON D	1.05098813

C-12 CUM. ACTUAL & PRED. CLASS B INCIDENTS 1975-1983 10:31 FRIDAY, APRIL 1987

PLOT OF BINC*FLTHR SYMBOL USED IS B
PLOT OF PREDB*FLTHR SYMBOL USED IS *



T-42 1988 PTR[illegible]ACTOR REPORT   10:12 FRIDAY, APRIL 1 [illegible]

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: AINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	40.32553110	40.32553110	87.83	0.0001	0.897785	19.
ERROR	10	4.59113557	0.45911356		ROOT MSE		AINC
CORRECTED TOTAL	11	44.91666667			0.67757919		[illegible].4166

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VALUE	PR
FLTHR	1	40.32553110	87.83	0.0001	1	40.32553110	87.83	0.

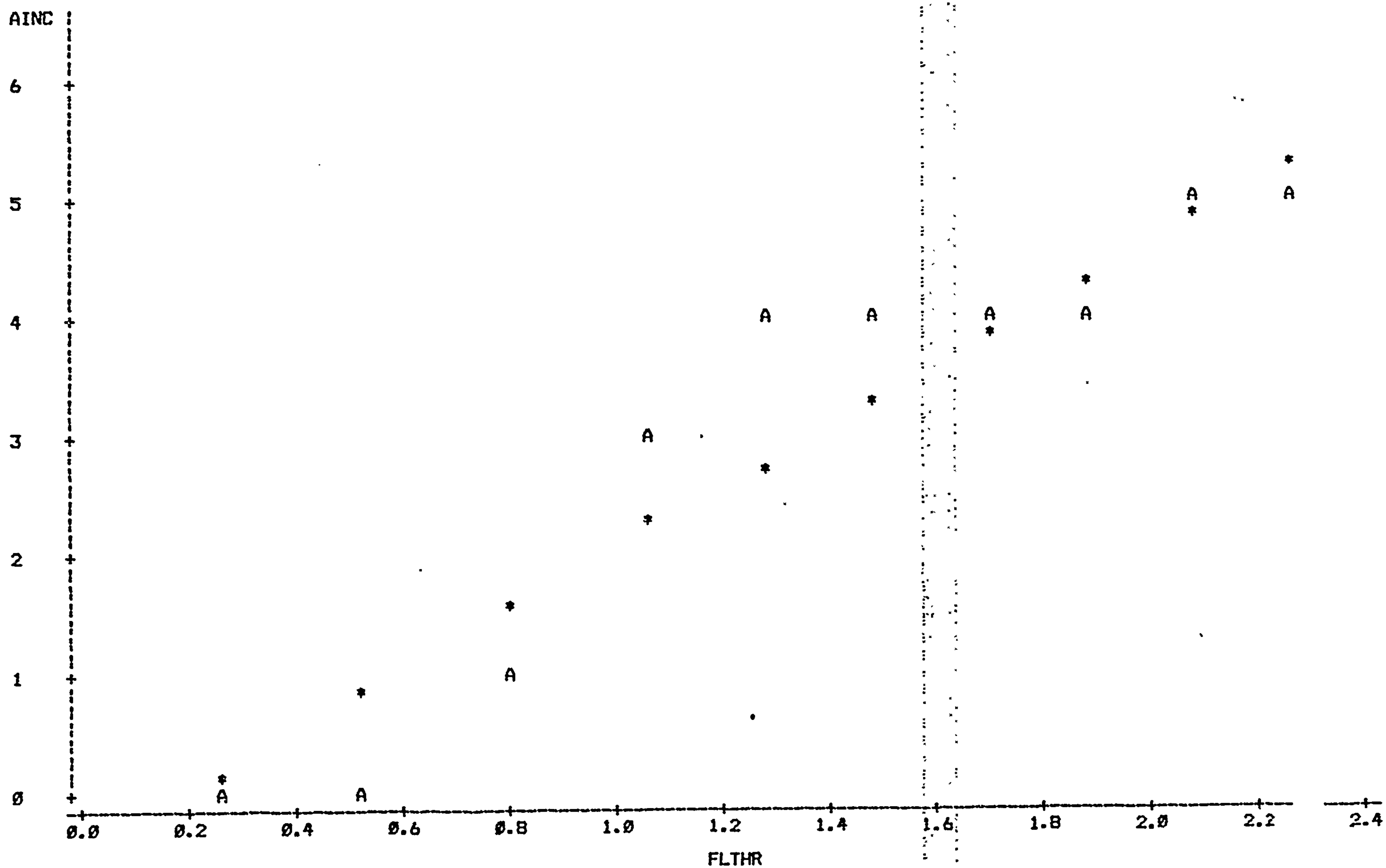
PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > !T!	STD ERROR OF ESTIMATE
INTERCEPT	-0.45768329	-1.00	0.3405	0.45733768
FLTHR	2.55269310	9.37	0.0001	0.27237586

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	0.00000000	0.21112230	-0.21112230	-0.66680408	1.08904869
2	0.00000000	0.88503328	-0.88503328	0.14192172	1.62814485
3	1.00000000	1.57170773	-0.57170773	0.95336746	2.19004799
4	3.00000000	2.22264447	0.77735553	1.70251897	2.74276996
5	4.00000000	2.78423695	1.21576305	2.32320221	3.24527169
6	4.00000000	3.32030250	0.67969750	2.88387346	3.75673154
7	4.00000000	3.85636805	0.14363195	3.40817886	4.30455724
8	4.00000000	4.31585281	-0.31585281	3.83041817	4.80128745
9	5.00000000	4.82639143	0.17360857	4.27659495	5.37618791
10	5.00000000	5.31140312	-0.31140312	4.68461232	5.93819393
11	5.00000000	5.79641481	-0.79641481	5.08223691	6.51059271
12	6.00000000	5.89852253	0.10147747	5.16496353	6.63208154

SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	4.59113557
SUM OF SQUARED RESIDUALS - ERROR SS	-0.00000000
PRESS STATISTIC	6.46454556
FIRST ORDER AUTOCORRELATION	0.46402296
DURBIN-WATSON D	1.06000272

T-42 CUM. ACTUAL & PRED. CLASS A INCIDENTS 1974-1988   10:12 FRIDAY, APRIL 1 1989

PLOT OF AINC*FLTHR   SYMBOL USED IS A
PLOT OF PREDA*FLTHR   SYMBOL USED IS *



GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: AINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	40.91641564	40.91641564	104.32	0.0001	0.904615	9.
ERROR	11	4.31435359	0.39221396		ROOT MSE		AINC
CORRECTED TOTAL	12	45.23076923			0.62626988		.4615

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VALUE	PR
FLTHR	1	40.91641564	104.32	0.0001	1	40.91641564	104.32	0.

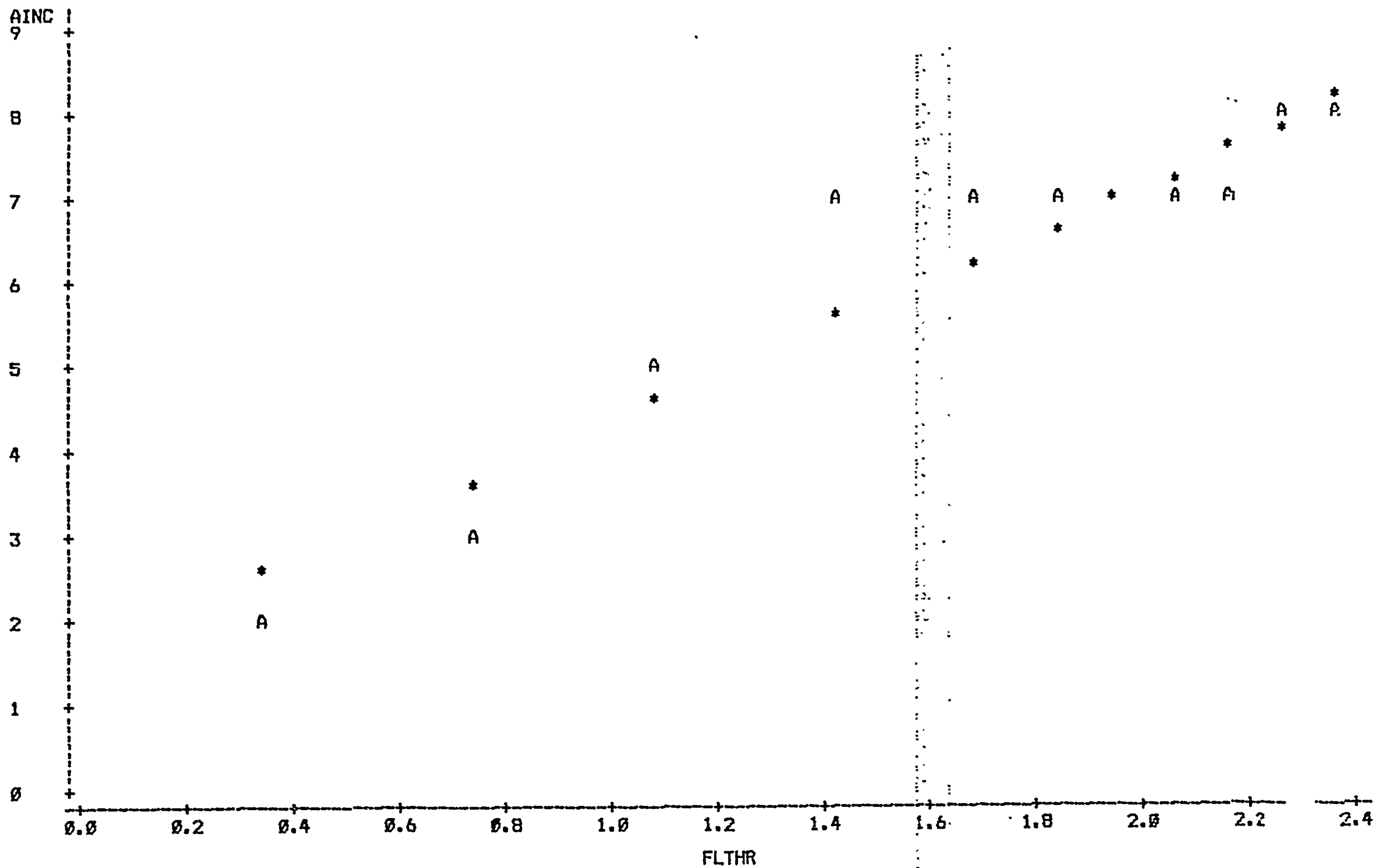
PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	1.66896141	3.34	0.0066	0.50034299
FLTHR	2.74223159	10.21	0.0001	0.26848304

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	2.00000000	2.60406238	-0.60406238	1.68910741	3.51901735
2	3.00000000	3.67079047	-0.67079047	2.95817602	4.38340491
3	5.00000000	4.65525161	0.34474839	4.10966522	5.20083800
4	7.00000000	5.56293026	1.43706974	5.13438175	5.99147877
5	7.00000000	6.27591048	0.72408952	5.89151965	6.66030131
6	7.00000000	6.68724522	0.31275478	6.30185988	7.07263055
7	7.00000000	6.98889069	0.01110931	6.59005449	7.38772689
8	7.00000000	7.29053616	-0.29053616	6.86855352	7.71251881
9	7.00000000	7.56475932	-0.56475932	7.11456564	8.01495301
10	8.00000000	7.86640480	0.13359520	7.37875091	8.35405869
11	8.00000000	8.11320564	-0.11320564	7.59086838	8.63554290
12	8.00000000	8.36000648	-0.36000648	7.80007514	8.91993782
13	8.00000000	8.36000648	-0.36000648	7.80007514	8.91993782

SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	4.31435359
SUM OF SQUARED RESIDUALS - ERROR SS	0.00000000
PRESS STATISTIC	6.348[illegible]18
FIRST ORDER AUTOCORRELATION	0.50541032
DURBIN-WATSON D	0.87456287

U-8 CUM. ACTUAL & PRED. CLASS A INCIDENTS 1974-1988   10:12 FRIDAY, APRIL 1 1989

PLOT OF AINC*FLTHR   SYMBOL USED IS A
PLOT OF PREDA*FLTHR   SYMBOL USED IS *



NOTE: 2 OBS HIDDEN

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: AINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	59.07671267	59.07671267	168.95	0.0001	0.938672	15.
ERROR	11	3.84636426	0.34966948		ROOT MSE		AINC
CORRECTED TOTAL	12	62.92307692			0.59132857		:.9230

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VALUE	PR
FLTHR	1	59.07671267	168.95	0.0001	1	59.07671267	168.95	0.

PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > !T!	STD ERROR OF ESTIMATE
INTERCEPT	-0.00780821	-0.02	0.9823	0.34402869
FLTHR	1.10049546	13.00	0.0001	0.08466598

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	0.00000000	0.53693704	-0.53693704	-0.14060974	1.21448383
2	1.00000000	1.12570212	-0.12570212	0.53015174	1.72125249
3	1.00000000	1.67594985	-0.67594985	1.15145885	2.20044084
4	2.00000000	2.22619758	-0.22619758	1.76482530	2.68756985
5	4.00000000	2.77644531	1.22355469	2.36656607	3.18632454
6	4.00000000	3.29367817	0.70632183	2.91729937	3.67005698
7	4.00000000	3.85493086	0.14506914	3.49377243	4.21608928
8	5.00000000	4.41618354	0.58381646	4.04567807	4.78668901
9	5.00000000	5.03246100	-0.03246100	4.62553161	5.43939040
10	5.00000000	5.62672855	-0.62672855	5.16464121	6.08881589
11	6.00000000	6.22099610	-0.22099610	5.69023238	6.75175981
12	7.00000000	6.78224878	0.21775122	6.17834212	7.38615545
13	7.00000000	7.43154111	-0.43154111	6.73637772	8.12670449

SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	3.84636426
SUM OF SQUARED RESIDUALS - ERROR SS	-0.00000000
PRESS STATISTIC	5.18066833
FIRST ORDER AUTOCORRELATION	0.28020876
DURBIN-WATSON D	1.31621166

GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: BINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	14.87837062	14.87837062	52.43	0.0001	0.826576	26.
ERROR	11	3.12162938	0.28378449		ROOT MSE		BINC
CORRECTED TOTAL	12	18.00000000			0.53271427		[illegible].0000

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VALUE	PR
FLTHR	1	14.87837062	52.43	0.0001	1	14.87837062	52.43	0.

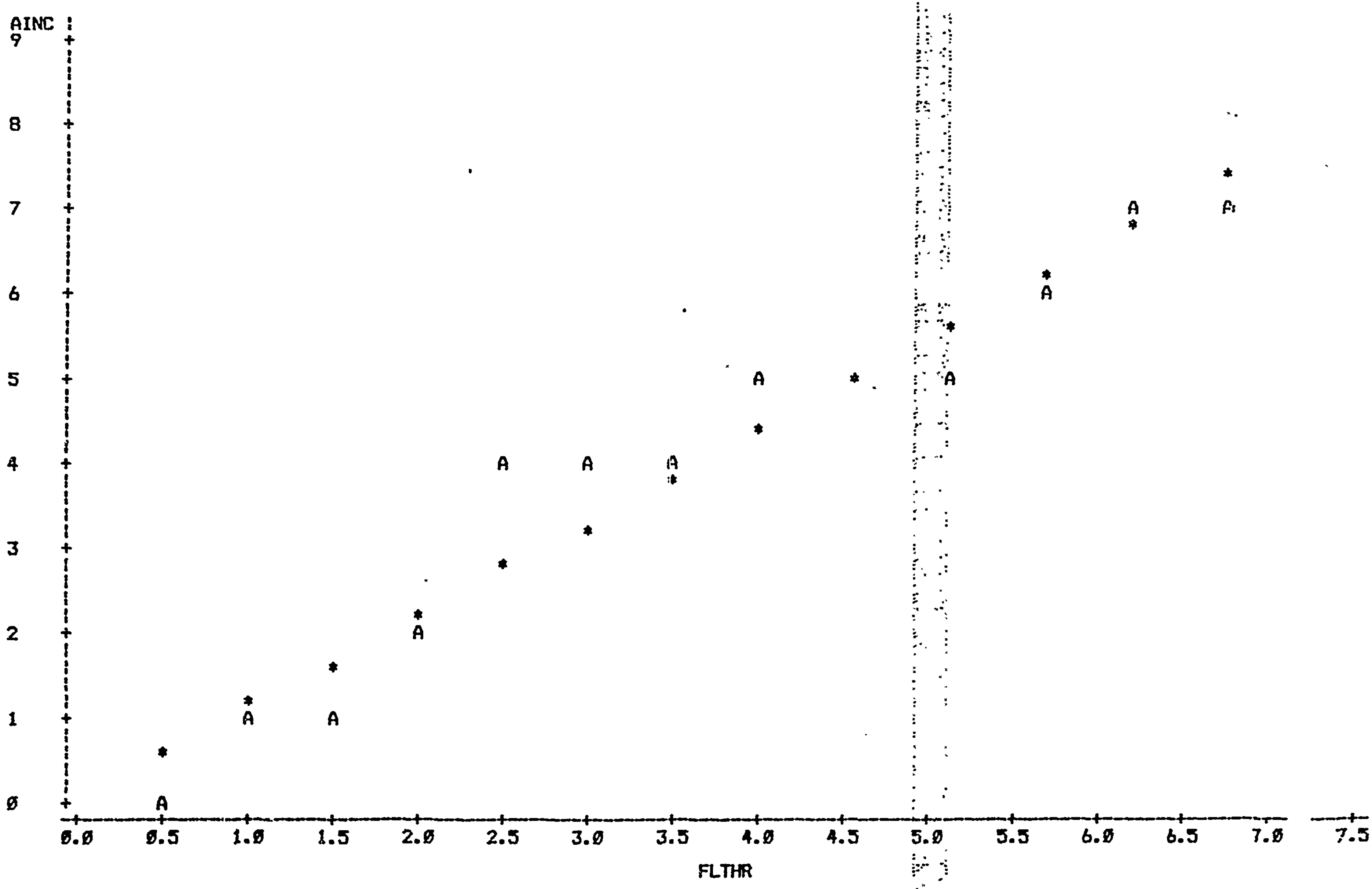
PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	0.02730529	0.09	0.9314	0.30992751
FLTHR	0.55227805	7.24	0.0001	0.07627363

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	0.00000000	0.30068293	-0.30068293	-0.30970334	0.91106919
2	0.00000000	0.59615168	-0.59615168	0.05963409	1.13266928
3	1.00000000	0.87229071	0.12770929	0.39978888	1.34479254
4	2.00000000	1.14842973	0.85157027	0.73279009	1.56406937
5	2.00000000	1.42456876	0.57543124	1.05531801	1.79381950
6	2.00000000	1.68413944	0.31586056	1.34506846	2.02321042
7	2.00000000	1.96580124	0.03419876	1.64044195	2.29116054
8	2.00000000	2.24746305	-0.24746305	1.91368322	2.58124288
9	2.00000000	2.55673876	-0.55673876	2.19014545	2.92333206
10	2.00000000	2.85496890	-0.85496890	2.43868508	3.27125272
11	3.00000000	3.15319905	-0.15319905	2.67504626	3.63135183
12	4.00000000	3.43486085	0.56513915	2.89081527	3.97890643
13	4.00000000	3.76070490	0.23929510	3.13444824	4.38696156

SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	3.12162938
SUM OF SQUARED RESIDUALS - ERROR SS	-0.00000000
PRESS STATISTIC	4.31363844
FIRST ORDER AUTOCORRELATION	0.53798523
DURBIN-WATSON D	0.87672335

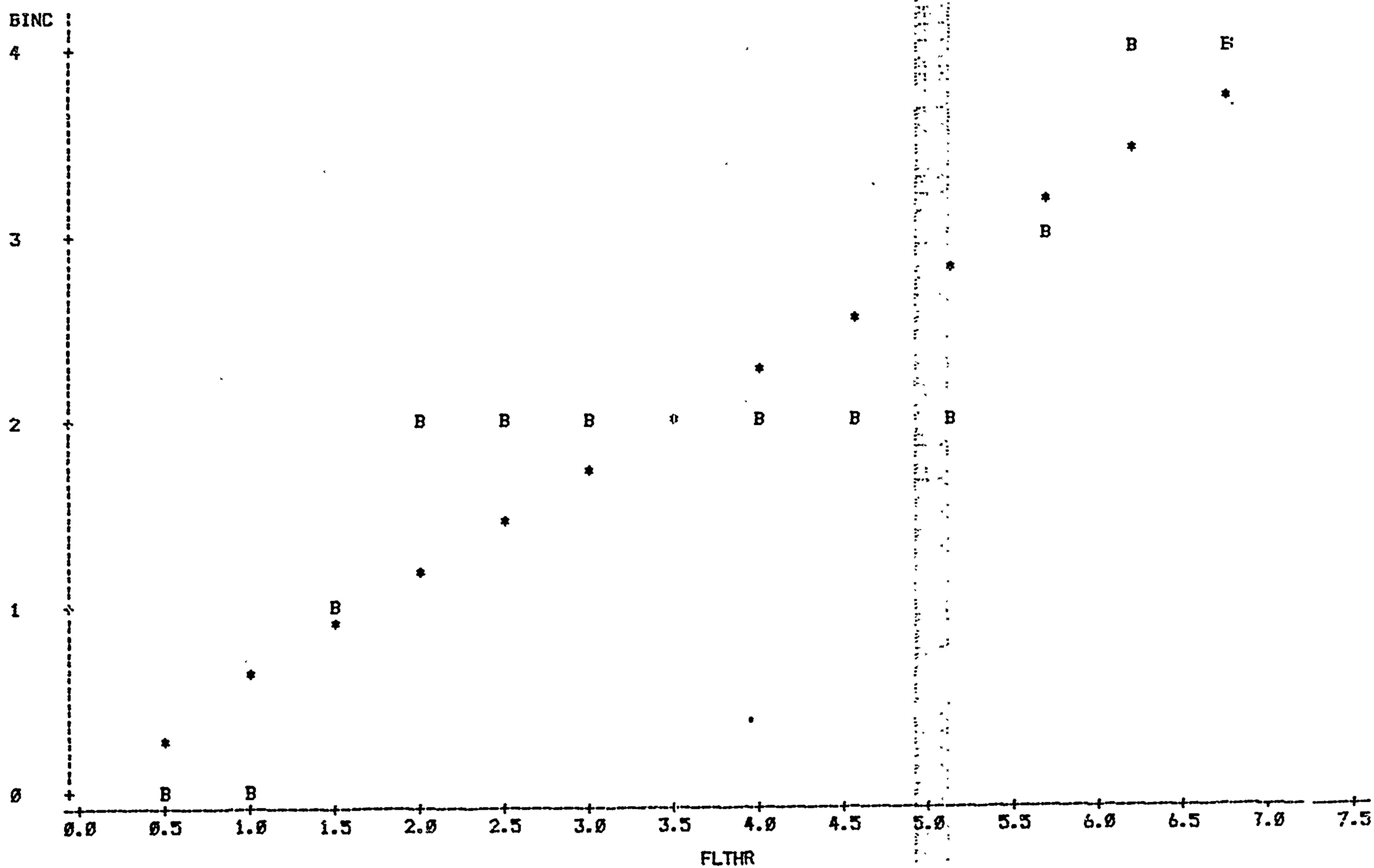
U-21 CUM. ACTUAL & PRED. CLASS A INCIDENTS 1974-1988 10:12 FRIDAY, APRIL 1 1989

PLOT OF AINC*FLTHR SYMBOL USED IS A
PLOT OF PREDA*FLTHR SYMBOL USED IS *



U-21 CUM. ACTUAL & PRED. CLASS B INCIDENTS 1974-1988 10:12 FRIDAY, APRIL 14, 1989

PLOT OF BINC*FLTHR SYMBOL USED IS B
PLOT OF PREDB*FLTHR SYMBOL USED IS *



GENERAL LINEAR MODELS PROCEDURE

DEPENDENT VARIABLE: AINC

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PR > F	R-SQUARE	
MODEL	1	442.00327198	442.00327198	608.00	0.0001	0.982229	8.
ERROR	11	7. [illegible]672802	0.72697527		ROOT MSE		AINC
CORRECTED TOTAL	12	450.00000000			0.85262845		10.0000

SOURCE	DF	TYPE I SS	F VALUE	PR > F	DF	TYPE III SS	F VALUE	PR
FLTHR	1	442.00327198	608.00	0.0001	1	442.00327198	608.00	0.

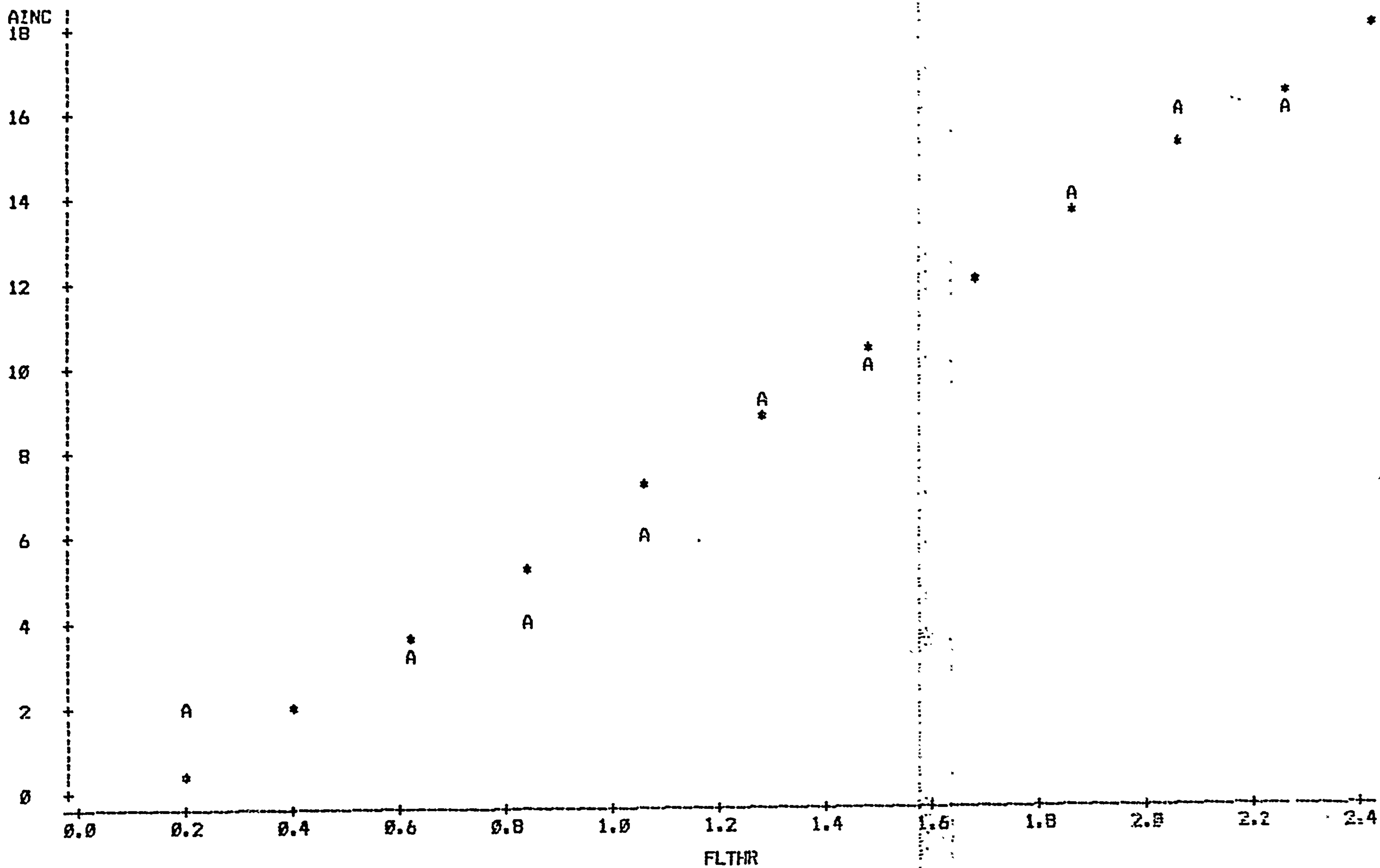
PARAMETER	ESTIMATE	T FOR H0: PARAMETER=0	PR > |T|	STD ERROR OF ESTIMATE
INTERCEPT	-1.31714031	-2.55	0.0269	0.51630817
FLTHR	7.93499941	24.66	0.0001	0.32180588

OBSERVATION	OBSERVED VALUE	PREDICTED VALUE	RESIDUAL	LOWER 95% CL FOR MEAN	UPPER 95% CL FOR MEAN
1	2.[illegible]000000	0.28572[illegible]57	1.71427043	-0.72560082	1.29705996
2	2.00000000	1.8568594[illegible]	0.14314055	0.96285412	2.75086479
3	3.00000000	3.57875433	-0.57875433	2.80452606	4.33298259
4	4.00000000	5.36412919	-1.36412919	4.69919406	6.02906432
5	6.00000000	7.01460907	-1.01460907	6.42987374	7.59934439
6	9.00000000	8.76030894	0.23969106	8.22819240	9.29242547
7	10.00000000	10.42665881	-0.42665881	9.90478390	10.94853373
8	12.00000000	11.93430870	0.06569130	11.38593431	12.48268309
9	14.00000000	13.44195859	0.55804141	12.83756078	14.04635639
10	16.00000000	15.02895847	0.97104[illegible]53	14.34163836	15.71627858
11	16.00000000	16.53660836	-0.53660[illegible]	15.75472607	17.31849065
12	18.00000000	17.88555826	0.11444174	17.01014446	18.76097205
13	18.00000000	17.88555826	0.11444174	17.01014446	18.76097205

SUM OF RESIDUALS	-0.00000000
SUM OF SQUARED RESIDUALS	7.99672802
SUM OF SQUARED RESIDUALS - ERROR SS	0.00000000
PRESS STATISTIC	12.4502[illegible]60
FIRST ORDER AUTOCORRELATION	0.24657116
DURBIN-WATSON D	1.13772921

OV-1 CUM. ACTUAL & PRED. [illegible]SS A INCIDENTS 1974-1988   10:12 FRIDAY, APRIL 14, [illegible]989

PLOT OF AINC*FLTHR   SYMBOL USED IS A
PLOT OF PREDA*FLTHR   SYMBOL USED IS *



NOTE: 2 OBS HIDDEN

APPENDIX C

NON-LINEAR SAS OUTPUT LISTINGS

```
TOF:
/*     SAS PROGRAM TO FIT A CUBIC EQUATION TO CLASS B INCIDENTS     */
/*      FOR THE UH-1 AIRCRAFT.  1989 LINEAR FIT WAS ONLY .7837 *.
DATA UH1REG;
   INPUT YEAR CHOURS HOURS AINC BINC;
/*   CHOURS=CUM FLIGHT HOURS (X10000);*/
/*   AINC = CUM CLASS A INCIDENTS;    */
/*   BINC = CUM CLASS B INCIDENTS     <
CARDS;
1977 1.28 1.28 1 0
1978 2.00 .72 1 0
1979 2.45 .45 1 0
1980 2.83 .38 2 0
1981 3.15 .32 3 2
1982 3.51 .36 3 2
1983 3.86 .35 4 2
198- 4.48 .62 8 2
1985 5.13 .65 11 3
1986 5.82 .69 14 3
1987 6.42 .60 20 3
1988 7.03 .61 23 3
1989 7.69 .66 24 3

                                                              MORE...
;
PROC NLIN;
     PARMS B0=0 B1=0 B2=0 B3=0;
           MODEL BINC=B0*CHOURS**3-B1*CHOURS**2+B2*CHOURS-B3;
              DER.B0=CHOURS**3;
              DER.B1=-CHOURS**2;
              DER.B2=CHOURS;
              DER.B3=-1;
    OUTPUT OUT = B P = PREDB R=YRESID ;
GOPTIONS DEVICE=TEK4014 VPOS 120;
    TITLE1 'UH-1 CLASS B (1977-1989) CUBIC EQUATION FIT';
     SYMBOL1 V=B ;
      SYMBOL2 V=DIAMOND .25 CM I=SPLINE;
PROC GPLOT;
   TI[illegible]  CUBIC FIT UH-1 PRED. CLASS B INCIDENTS;
   PLOT PREDB * CHOURS = 2
        BINC *  CHOURS = 1/OVERLAY;
  LABEL PREDB = 'CUM. CLASS B MISHAPS';
  LABEL HOURS = 'CUM. FLYING HOURS';
LEGEND;
PROC PRINT UNIFORM;
   VAR HOURS CHOURS BINC PREDB ;

                                                              MORE...
```

```
TOF:
 *   CHOURS=CUM FLIGHT HOURS (X10000);*/
/*   AINC = CUM CLASS A INCIDENTS;*/
/*   BINC = CUM CLASS B INCIDENTS;*/
DATA UH1H;
    INPUT YEAR CHOURS AINC BINC;
     CARDS;
1974 6.42 12 3
1975 13.0 38 8
1976 19.8 55 10
1977 27.0 66 13
1978 34.0 88 16
1979 41.0 98 19
1980 48.7 110 19
1981 56.1 124 23
1982 62.8 141 32
1983 69.7 148 37
1984 75.9 162 39
1985 82.1 172 41
1986 88.6 181 47
1987 95.0 188 49
1988 ·  ' 3 197 49
```

MORE...

```
:
   ' 'LE UH-1H CUM ACTUAL & PREDICTED CLASS B INCIDENTS 1974-1987;
/·      SAS PROGRAM TO FIT A CUBIC EQUATION TO CLASS B INCIDEN'S     */
/ ·      FOR THE UH-1H AIRCRAFT.  1989 LINEAR FIT WAS POOR.        */
PROC NLIN;
     PARMS B0=0 B1=0 B2=0 B3=0;
           MODEL BINC=B0*CHOURS**3-B1*CHOURS**2+B2*CHOURS-B3;
              DER.B0=CHOURS**3;
              DER.B1=-CHOURS**2;
              DER.B2=CHOURS;
              DER.B3=-1;
    OUTPUT OUT = B P = PR   = RESID ;
GOPTIONS DEVICE=TEK4014 VPOS 120;
    TITLE1 'UH-1H CLASS B (1977-1989) CUBIC EQUATION FIT';
     SYMBOL1 V=B ;
      SYMBOL2 V=DIAMOND .25 CM I=SPLINE;
PROC GPLOT;
   TITLE CUBIC FIT UH-1H CUM. CLASS B INCIDENTS;
   PLOT PREDB * CHOURS = 2
        BINC *  CHOURS = 1/OVERLAY;
  LABEL PREDB = 'CUM. CLASS B MISHAPS';
   . . ·  = 'CUM. FLYING HOURS';
```

MORE...

```
LEGEND;
PROC PRINT UNIFORM;
   VAR CHOURS BINC PREDB ;
EOF:
```

MORE...

```
TOF:
/*   CHOURS=CUM FLIGHT HOURS (X10000);*/
/*   AINC = CUM CLASS A INCIDENTS;*/
/*   BINC = CUM CLASS B INCIDENTS;*/
DATA OH58;
     INPUT CHOURS AINC BINC;
      CARDS;
3.13 9 0
6.34 15 0
9.27 27 0
12.3 33 0
15.3 40 0
18.1 50 1
20.9 61 1
24.0 74 1
26.8 82 1
29.6 98 2
32.3 105 2
35.0 117 2
   TITLE OH-58 CUM ACTUAL & PREDICTED CLASS B INCIDENTS 1974-1987;
/*     SAS PROGRAM TO FIT A CUBIC EQUATION TO CLASS B INCIDENTS     */
```

MORE...

```
/*      FOR THE OH-58 AIRCRAFT.  1989 LINEAR FIT WAS POOR.         */
PROC NLIN;
      PARMS B0=0 B1=0 B2=0 B3=0;
            MODEL BINC=B0*CHOURS**3-B1*CHOURS**2+B2*CHOURS-B3;
               DER.B0=CHOURS**3;
               DER.B1=-CHOURS**2;
               DER.B2=CHOURS;
               DER.B3=-1;
     OUTPUT OUT = B P = PREDB R=YRESID ;
GOPTIONS DEVICE=TEK4014 VPOS 120;
     TITLE1 'OH-58 CLASS B CUBIC EQUATION FIT';
      SYMBOL1 V=B ;
       SYMBOL2 V=DIAMOND .25 CM I=SPLINE;
PROC GPLOT;
   TITLE CUBIC FIT OH-58 CUM. CLASS B INCIDENTS;
   PLOT PREDB * CHOURS = 2
        BINC *  CHOURS = 1/OVERLAY;
  LABEL PREDB = 'CUM. CLASS B MISHAPS';
  LABEL CHOURS = 'CUM. FLYING HOURS';
LEGEND;
PROC PRINT UNIFORM;
   VAR CHOURS BINC PREDB ;
```

MORE...

```
TOF:
/*   CHOURS=CUM FLIGHT HOURS (X10000);*/
/*   AINC = CUM CLASS A INCIDENTS;*/
/*   BINC = CUM CLASS B INCIDENTS;*/
DATA OH6;
    INPUT CHOURS AINC BINC;
     CARDS;
.302 4 0
.636 5 0
.992 5 0
1.32 8 0
1.61 8 0
1.94 8 0
2.27 9 0
2.63 10 1
2.98 11 1
3.25 11 1
3.50 12 1
3.75 12 1
4.06 13 1
;
   TITLE OH-6 CUM ACTUAL & PREDICTED CLASS B INCIDENTS 1974-1987;

                                                              MORE...
/*      SAS PROGRAM TO FI  - :    : EQUATION TO CLASS B INCIDENTS      */
 *       FOR THE OH-6 AIRCRAFT.  1989 LINEAR FIT WAS POOR.       */
PROC NLIN;
     PARMS B0=0 B1=0 B2=0 B3=0;
           MODEL BINC=B0*CHOURS**3-B1*CHOURS**2+B2*CHOURS-B3;
              DER.B0=CHOURS**3;
              DER.B1=-CHOURS**2;
              DER.B2=CHOURS;
              DER.B3=-1;
    OUTPUT OUT = B P = PREDB R=YRESID ;
GOPTIONS DEVICE=TEK4014 VPOS 120;
    TITLE1 'OH-6 CLASS B CUBIC EQUATION FIT';
     SYMBOL1 V=B ;
      SYMBOL2 V=DIAMOND .25 CM I=SPLINE;
PROC GPLOT;
   TITLE CUBIC FIT OH-6 CUM. CLASS B INCIDENTS;
   PLOT PREDB * CHOURS = 2
        BINC *  CHOURS = 1/OVERLAY;
  LABEL PREDB = 'CUM. CLASS B MISHAPS';
  LABEL CHOURS = 'CUM. FLYING HOURS';
LEGEND;
PROC PRINT UNIFORM;

                                                              MORE...
   VAR CHOURS BINC PREDB ;
EOF:
```

```
TOF:
/*   CHOURS=CUM FLIGHT HOURS (X 100,000);*/
/*   AINC = CUM CLASS A INCIDENTS;*/
/*   BINC = CUM CLASS B INCIDENTS;*/
DATA TH55A;
    INPUT CHOURS AINC BINC;
     CARDS;
1.19 17 0
1.94 23 0
2.77 26 0
3.42 30 0
3.96 31 0
4.64 31 0
5.65 31 0
6.64 31 0
7.67 31 0
8.65 31 0
9.57 32 0
10.6 32 0
;
   TITLE TH-55 CUM ACTUAL & PREDICTED CLASS B INCIDENTS 1974-1987;
/*     SAS PROGRAM TO FIT A CUBIC EQUATION TO CLASS A INCIDENTS     */

                                                           MORE...
/*      FOR THE TH-55 AIRCRAFT.  1989 LINEAR FIT WAS POOR.       */
PROC NLIN;
     PARMS B0=0 B1=0 B2=0 B3=0;
           MODEL AINC=B0*CHOURS**3-B1*CHOURS**2+B2*CHOURS-B3;
              DER.B0=CHOURS**3;
              DER.B1=-CHOURS**2;
              DER.B2=CHOURS;
              DER.B3=-1;
    OUTPUT OUT = B P = PREDA R=YRESID ;
GOPTIONS DEVICE=TEK4014 VPOS 120;
    TITLE1 'TH-55 CLASS A CUBIC EQUATION FIT';
     SYMBOL1 V=B ;
      SYMBOL2 V=DIAMOND .25 CM I=SPLINE;
PROC GPLOT;
   TITLE CUBIC FIT TH-55 CUM. CLASS A INCIDENTS;
   PLOT PREDA * CHOURS = 2
        AINC *  CHOURS = 1/OVERLAY;
  LABEL PREDA = 'CUM. CLASS A MISHAPS';
  LABEL CHOURS = 'CUM. FLYING HOURS';
LEGEND;
PROC PRINT UNIFORM;
   VAR CHOURS AINC PREDA ;

                                                           MORE...
```